REPORT RESUMES

ED 003 274 24

PERSONAL AND SOCIAL VARIABLES DIFFERENTIATING CHILDREN WITH HIGH AND LOW CURIOSITY.

BY- MAW, WALLACE H. MAW, ETHEL W.
DELAWARE UNIV., NEWARK

REPORT NUMBER CRP-1511 PUB DATE 65
EDRS PRICE MF-$0.27 HC-$7.64 191P.

DESCRIPTORS- *SOCIAL DIFFERENCES, *INDIVIDUAL DIFFERENCES, SOCIAL DEVELOPMENT, *PERSONAL ADJUSTMENT, *SOCIAL ADJUSTMENT, CHILD DEVELOPMENT, PARENT CHILD RELATIONSHIP, PARENT ATTITUDES, *CURIOSITY, CHILD RESPONSIBILITY, MEASUREMENT INSTRUMENTS, SEX DIFFERENCES, SELF EXPRESSION, GRADE 5, NEWARK, DELAWARE

AN ATTEMPT WAS MADE TO IDENTIFY SOME OF THE PERSONAL AND SOCIAL VARIABLES DIFFERENTIATING CHILDREN WHO ARE HIGH IN CURIOSITY FROM THOSE WHO ARE LOW. THREE MAJOR QUESTIONS WERE EXAMINED WHICH LED TO THE FORMULATION OF 18 HYPOTHESES. THE QUESTIONS WERE--(1) DO CHILDREN OF HIGH CURIOSITY DIFFER FROM CHILDREN OF LOW CURIOSITY IN SELF-ADJUSTMENT AND SELF-DEVELOPMENT, (2) DO CHILDREN OF HIGH CURIOSITY DIFFER FROM CHILDREN OF LOW CURIOSITY IN THEIR SOCIAL ADJUSTMENT AND RESPONSIBILITY, AND (3) DO THE PARENTS OF HIGH-CURIOSITY CHILDREN DIFFER FROM THE PARENTS OF LOW-CURIOSITY CHILDREN IN THEIR CHILD-REARING ATTITUDES. THE FIRST PHASE OF THE STUDY WAS CONCERNED WITH TRYING OUT INSTRUMENTS TO BE ADMINISTERED IN THE MAJOR STUDY. THIS PHASE INVOLVED 289 CHILDREN FROM 9 FIFTH-GRADE CLASSROOMS. IN THE SECOND AND MAJOR PHASE, THE INSTRUMENTS WERE ADMINISTERED TO 577 FIFTH-GRADERS IN 19 CLASSROOMS. IN ADDITION, INSTRUMENTS WERE SENT TO SOME OF THE PARENTS TO ASCERTAIN THEIR ATTITUDES TOWARD CHILDREN AND FAMILY RELATIONS. EVIDENCE FROM THE STUDY PROVIDED AFFIRMATIVE ANSWERS TO THE THREE QUESTIONS WITH RESPECT TO THE MALE SUBJECTS, BUT WEAKER AFFIRMATIVES TO THE FIRST TWO AND A NEGATIVE ANSWER TO THE THIRD WITH RESPECT TO THE GIRLS. (JC)

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

Personal and Social Variables Differentiating Children with High and Low Curiosity

Cooperative Research Project No. 1511

Wallace H. Maw
University of Delaware

Ethel W. Maw
Bryn Mawr College

University of Delaware
Newark, Delaware

1965

The research reported herein was supported by the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education, and Welfare.

ED003274

_____"Curiosity is one of the permanent and
certain characteristics of a vigorous mind."
_____ Samuel Johnson

ACKNOWLEDGMENTS

The authors gratefully acknowledge all those who helped in this investigation. Without their significant contributions, it would have been impossible to complete a study of this size.

We wish to thank the personnel of the schools in which the study was conducted. Those who participated are named in the Appendix. Boards of Education, superintendents, and principals worked earnestly to assure a milieu conducive to research; teachers helped in the administration of the testing instruments; and last, but not least, the pupils gave willingly of their time without expecting any rewards for their efforts.

Members of the administration, faculty, and staff of the University of Delaware have served the project in many ways too numerous to mention. Special appreciation is given to Dr. Roy M. Hall, Dean of the School of Education, who encouraged the continuation of this research, and to Dr. Howard E. Lamb who acted as the assistant project director during the early period of the study. Dr. Lamb made many valuable suggestions regarding the procedures to follow and techniques to use in the investigation.

The Office of Education of the United States Department of Health, Education, and Welfare cooperated in many ways. In addition to the financial sponsorship of the investigation, members of the staff of the Cooperative Research Branch made invaluable suggestions for the project.

Although many people have contributed to the research study, the authors, themselves, recognize the limitations, both of the investigation and of the report. The responsibility for such shortcomings is theirs alone.

TABLE OF CONTENTS

Chapter Page

List of Tables x

I. PURPOSE AND PROCEDURES 1
Objective of Study. 2
Questions. 2
Hypotheses 2
Assumptions of Study. 4
Definition of Curiosity 5
Importance of Study 6
Limitations of Study. 7
General Limitations. 7
Specific Problem 9
Plan of Research. 10
Samples. 10
Procedures 12
Plan of Report. 14

II. REVIEW OF THE LITERATURE 15
Personal Variables. 16
The Self 17
Anxiety. 24
Thought Processes and Motivation 29
Moral and Ethical Values 34
Overall Personal Maturity and Adjustment 38
Social Variables. 41
Social Prejudice 42
Social Participation 45
Overall Social Adjustment. 51
Home and Family Variables 57
Children's Attitudes Toward Family 58
Parental Attitudes Toward Children 59
Summary 62

III. MEASURING INSTRUMENTS AND PROCEDURES 66
Instruments Used to Measure Personal and Social Adjustment 66
The California Test of Personality 67
The Behavior Preference Record 70
The Children's Personality Questionnaire 71
Cassel Group Level of Aspiration Test. 75
Social Distance. 76
Social Attitudes 76

Institute of Child Study Security Test 78
Descriptive Words (Morality) 80
Word Association Test (Creativity) 80
Uses of Things (Creativity) 81
Children's Manifest Anxiety Scale 81
General Anxiety Scale for Children 82
Social Prejudice 83
Intolerance of Ambiguity 84
Conceptual Systems 84
Instruments Used to Measure Parental Attitudes . . . 86
The Parental Attitude Research Instrument 86
Measures and Procedures Used in Establishing Criterion Groups 88
Teacher Judgment of Curiosity 88
Peer Judgment of Curiosity 89
Self-Rating of Curiosity 89
Establishing Curiosity Groups 89
Summary 92

IV. ANALYSIS OF RESULTS 96
Personal Variables 96
The Self 96
Anxiety 100
Thought Processes and Motivation 105
Moral and Ethical Values 113
Overall Personal Maturity and Adjustment 117
Social Variables 119
Social Prejudice 119
Social Participation 121
Overall Social Adjustment 127
Total Adjustment 128
Parental Attitudes 130
Summary 133

V. SUMMARY AND CONCLUSIONS 141
Assumptions of Study 142
Definition of Curiosity 142
Importance of Study 143
Limitations of Study 144
Review of Literature 146
Personal Variables 146
Social Variables 147
Home and Family Variables 148
Procedures of Study 149
Selection of Criterion Groups 149
Selection of Measuring Instruments 152
The Administration of the Instruments 154

Findings of the Study. 154
Hypotheses. 154
Questions 158
Characteristics of Children with High Curiosity .158
Future Studies .160

Bibliography. 163

Appendix -- Schools and School Personnel Cooperating in the Investigation 180

LIST OF TABLES

Table Page

1. Mean, variance, and results of tests of significance between means and variances of Lorge-Thorndike Intelligence Quotients for high- and low-curiosity groups of boys and girls. 93

2. Results of tests of significance of difference between means and variances of high- and low-curiosity groups of boys and girls on a self-rating scale of curiosity 93

3. Results of tests of significance of difference between means of scores of high- and low-curiosity boys on variables related to self-acceptance and self-sufficiency 98

4. Results of tests of significance of difference between means of scores of high- and low-curiosity girls on variables related to self-acceptance and self-sufficiency. 99

5. t's from tests of significance of difference between means of low-curiosity boys and low- and high-curiosity girls, respectively, on tests related to personal security 101

6. Results of tests of significance of difference between means on tests of anxiety and related variables for groups of high- and low-curiosity boys .102

7. Results of tests of significance of difference between means on tests of anxiety and related variables for groups of high- and low-curiosity girls. 103

8. Results of tests of significance of difference between means of variables related to thought processes and motivation for high- and low-curiosity boys .106

9. Results of tests of significance of difference between means of variables related to thought processes and motivation for high- and low-curiosity girls. 109

Table Page

10. Results of tests of significance of difference between means on measures of morality and ethical values for high- and low-curiosity boys. 115

11. Results of tests of significance of difference between means on measures of morality and ethical values for high- and low-curiosity girls 116

12. Results of tests of significance of difference between means on measures of overall personal adjustment and maturity for high- and low-curiosity boys and girls. 118

13. Results of tests of significance of difference between means on tests of social prejudice of high- and low-curiosity boys and girls 120

14. Results of tests of significance of difference between means of high- and low-curiosity groups of boys on tests of social participation and social adjustment 123

15. Results of tests of significance of difference between means of high- and low-curiosity groups of girls on tests of social participation and social adjustment 125

16. Results of tests of significance of difference between means of high- and low-curiosity groups of boys and girls on tests of overall social adjustment. 128

17. Results of tests of significance of difference between means of high- and low-curiosity boys and girls on the total adjustment score of the California Test of Personality. 129

18. Means and t's for tests of significance of difference between means on the sub-scales of the Parental Attitude Research Instrument for fathers of high- and low-curiosity boys 134

19. Means and t's for tests of significance of difference between means on the sub-scales of the Parental Attitude Research Instrument for fathers of high- and low-curiosity girls. 135

Table Page

20. Means and t's for tests of significance of difference between means on the sub-scales of the Parental Attitude Research Instrument for mothers of high- and low-curiosity boys 136

21. Means and t's for tests of significance of difference between means on the sub-scales of the Parental Attitude Research Instrument for mothers of high- and low-curiosity girls. 137

CHAPTER I

PURPOSES AND PROCEDURES

Investigations into human curiosity are relatively new when compared to the study of curiosity behavior in lower species. These latter studies of curiosity, exploratory behavior, and manipulative activities have revealed considerable information regarding the concept of curiosity (34, 153, 162). The few empirical investigations conducted with school children have, for the most part, related the quantity and quality of their questions to curiosity level. In some of these studies, efforts have been made to relate the findings to such variables as sex (53), age (74), grade (204), and intelligence (61).

These earlier studies raised questions regarding the nature of curiosity and the elementary school curriculum (155). Many opinions were expressed regarding the possibility of this relationship. However, writers and researchers neither adequately defined what they meant by curiosity nor attempted to explore the function of curiosity in the learning process in an organized manner.

Before studying curiosity and the learning process, it would be helpful, if not essential, to know something about children differing in their curiosity level. Yet, very little is known about the characteristics of persons who differ in their manifestations of curiosity. It is not known whether persons differing in levels of curiosity differ also in personal and social characteristics. It may be assumed, however, that certain personal and social variables are more likely to be associated with high curiosity than with low curiosity. If these can be identified, a better understanding of the function of curiosity in the learning process may be achieved.

Objective of Study

It was the objective of this study to identify some of the personal and social variables differentiating children who are high in curiosity from those who are low. In order to pursue this objective, three major questions were proposed which led to the formulation of 18 hypotheses.

Questions: -- The questions, which were investigated for each sex are as follows:

1. Do children of high curiosity differ from children of low curiosity in self-adjustment and self-development?
2. Do children of high curiosity differ from children of low curiosity in their social adjustment and responsibility?
3. Do the parents of high-curiosity children differ from the parents of low-curiosity children in their child-rearing attitudes?

Hypotheses. -- These broad questions generated several specific hypotheses, which were used as a basis for selecting the instruments and directing the procedures used.

It was hypothesized that:

1. High-curiosity children are more self-accepting than are low-curiosity children.
2. High-curiosity children are more self-sufficient than are low-curiosity children.
3. High-curiosity children have a higher level of aspiration than have low-curiosity children.
4. High-curiosity children are more free from hindering anxieties and self-doubts than are low-curiosity children.
5. High-curiosity children are more organized in their thought processes than are low-curiosity children.
6. High-curiosity children are more tolerant of ambiguity than are low-curiosity children.
7. High-curiosity children hold a more balanced point of view in relation to moral values than do low-curiosity children.
8. High-curiosity children have reached a higher level of emotional maturity than have low-curiosity children.
9. High-curiosity children are more free from social prejudice than are low-curiosity children.
10. High-curiosity children exhibit a more healthy participation in group activities than do low-curiosity children.
11. High-curiosity children show a higher level of social skill than do low-curiosity children.
12. High-curiosity children are more responsible for group welfare than are low-curiosity children.

13. High curiosity children show better overall social adjustment than do low-curiosity children.
14. High-curiosity children feel that their discipline is more fair than do low-curiosity children.
15. High-curiosity children are better in their overall adjustment than are low-curiosity children.
16. Parents of high-curiosity children are more accepting of their children's behavior than are parents of low-curiosity children.
17. Parents of high-curiosity children are more likely to reward and encourage information seeking and exploratory behavior than are parents of low-curiosity children.
18. Parents of high-curiosity children are more democratic in their child-rearing practices than are parents of low-curiosity children.

Assumptions of Study

These hypotheses were predicated on the assumption that it is possible to identify groups of children varying in degrees of curiosity. It was further assumed that measuring instruments could be found, or developed, which would adequately indicate differences between groups differing in curiosity level.

It was not assumed that a causal relationship exists between given variables and curiosity. Although a high correlation between a variable and curiosity could indicate causation, it more likely suggests the possibility of common antecedents. The results of studies of parental attitudes and of the home environment could logically be considered in the former sense. It seems that such studies are somewhat closer to the problem of causal relationships than are studies of personal and social variables, but, in fact, may not be.

Definition of Curiosity

Since the concept of curiosity does not have the same meaning for all readers, it was necessary to define it more precisely for this study. In order to develop a definition that could be used to identify children differing in curiosity on the basis of their behavior, several steps were taken. These were described in detail in Chapter III of an earlier report, and, therefore, are not discussed here (138: 25-31). The steps included informal inquiries, formal inquiries, review of dictionary definitions, an examination of the historical development of the meaning of the word, and a survey of the literature.

On the basis of this information, it was concluded that curiosity is demonstrated by an elementary school child when he:

1. Reacts positively to new, strange, incongruous, or mysterious elements in his environment by moving toward them, by exploring them, or by manipulating them.
2. Exhibits a need or a desire to know more about himself and/or his environment.
3. Scans his surroundings seeking new experiences.

4. Persists in examining and exploring stimuli in order to know more about them.

Importance of Study

It was stated earlier in this report that very little is known about human curiosity and especially about other variables that may be associated with curiosity. Such a dearth of information in itself should be sufficent reason for studying more intensively personal and social variables which may be related to curiosity.

In addition, however, there are many statements claiming that curiosity is important in creativity, problem solving and some types of learning. If these relationships do exist, and if it is important to maintain or increase curiosity, something should be known about the variables differentiating children with high curiosity from children with low curiosity. If the identification of some of the variables would lead to the organization of curricula more conducive to the development of curiosity, it is hopefully assumed that such changes would be beneficial to the improvement of the previously mentioned cognitive functions.

That there are differences between high-curiosity and low-curiosity children was made clear in an earlier study (138: 119). It was found that high-curiosity children as compared to low-curiosity children are those who:

1. Ask more and better questions.
2. Select more outgoing, adventurous, investigatory activities.

3. Have more general information about the world in which they live.
4. Can recall more specific facts of an unusual nature.
5. React more positively to the unbalanced and unfamiliar.
6. Persist longer at problem solving.
7. Are more alert to verbal absurdities.

It seems, therefore, that it is important to extend this list and to eventually apply these findings to educational practices.

Limitations of Study

The limitations of this study are two-fold. There are those limitations that are of a general nature and similar to those of all studies of this type. In addition, there are limitations that are specific to this study which grew out of unique conditions temporarily existing in the social environment where the study was conducted.

General Limitations. -- The present study is limited to children attending the fifth-grade in selected public schools in New Castle County, Delaware. This grade level was selected in the first investigation of this series to avoid, as far as possible, children with developmental reading problems and children whose interests were not so highly crystallized as is often the case of junior- and senior-high-school pupils. It seemed advisable to continue working with this particular group in order that comparisons might be possible between the findings of both investigations.

New Castle County is a suburban area outside the City of Wilmington. There are some farms, but agriculture is limited. Large industries, especially chemical, employ the majority of the people. Many of them are working in research and development. For the most part, they have come to Delaware from other areas of the United States. The population of the area is quite mobile both as to emigration and immigration.

The State of Delaware provides special classes for the educable and trainable. Therefore, there were no children in the study with IQ's low enough to be admitted to the special classes. The mean IQ of all the children in the study was 112.01.

The sample was further delimited to include only children for whom complete data were obtained. This group included 217 girls and 224 boys. The mean IQ of the former was 114.59 and the mean IQ of the latter was 110.12.

In general, the children composing the sample were from middle-class families. No children were from predominately less-chance, deprived areas. The majority of children of the upper-class families were probably attending private schools since this is traditional in this area and there are many excellent private schools located nearby.

Since the study was limited to the fifth grade, age and grade were controlled. Therefore, no comparisons among age groups or grade groups were possible or intended.

Specific problem. -- Just prior to the beginning of the testing for the major phase of this investigation, a small, but highly vocal, group was pressing for the abolition of all testing in the schools in New Castle County. At the same time, there were similar movements to halt testing programs in other areas of the United States. No attempt was made to ascertain what relationships, if any, existed among these groups.

The strongest protests against the present investigation originated in a district where tests based on Freudian concepts had been used in a guidance program. All types of instruments that could be classified as personality tests were looked upon with suspicion by some parents in the school districts. The directors of the present study met with groups of parents, professional people, teachers, and administrators and discussed the nature of the present research. The participants of these conferences were assured of the anonymity of the results. Only two fifth-grade classes of children were eliminated from the study as a result of the testing controversy and this happened because action was taken before a conference could be arranged.

In light of these conditions, it seemed unwise to retain some of the instruments examined in the preliminary study. It was also inappropriate to interview parents as originally planned, since such interviews were apt to arouse feelings damaging to other aspects of the investigation. After the instruments had been administered to the children in the schools, however, it was possible to send questionnaires to the parents.

Although the response was good--111 families of the 200 to whom the questionnaires were sent returned them--there were some indications that the anti-testing group had had some effect. This limitation was revealed by extraneous statements attached to a few of the questionnaires that were returned. These questionnaires were not tabulated.

The extent of the damage of this movement to the present study is unknown. It is difficult to ascertain to what extent these community discussions--especially if they were part of family intercourse--influenced the attitudes, behavior, and ultimately the responses of the pupils. Until all of the studies can be replicated, this limitation must be a consideration in the interpretation of the results.

Plan of Research

The study was carried out in two stages. The first, or preliminary, phase was concerned with trying out instruments to be administered in the major study and with analyzing the procedures to be employed. The second, or major, phase constituted the research reported in this paper.

Samples. -- Two samples were used in the investigation. The preliminary phase included 289 children from nine fifth-grade classrooms. In the major phase, the instruments were administered to 577 children attending 19 fifth-grade classrooms.

Since it was the purpose of the first phase to analyze tests and procedures to be used in the major study, this sample was divided into three groups of three classrooms each. This procedure permitted the examination of a larger number of instruments than would have otherwise been possible. It was not the intent of this phase to generate the type of data necessary to answer questions raised and to test hypotheses stated at the beginning of the study.

In the sample of 577 children in the major study, there were 441 for whom all data were available at the conclusion of the testing period. From this group, several smaller groups were selected to control for intelligence which had been shown to have a product-moment correlation of approximately .36 with curiosity. The procedure used will be described later. It permitted the identification of the following groups whose titles will be described below:

1. Extreme groups: 15 high-curiosity boys and 16 high-curiosity girls; 14 low-curiosity boys and 12 low-curiosity girls.
2. Consistent groups: 50 high-curiosity boys and 37 high-curiosity girls; 40 low-curiosity boys and 30 low-curiosity girls.
3. Total groups: 60 high-curiosity boys and 50 high-curiosity girls; 49 low-curiosity boys and 41 low-curiosity girls.

The decision to report the analyses for all three groups was influenced by a desire to report all findings which might serve to give direction to future studies. Precautions were taken to avoid the error--which could easily be made under these circumstances--of claiming a greater number of significant findings than were justified. The problems involved are discussed in detail in Chapter IV.

Procedures. -- After selecting the schools and the classrooms where the study was to be carried out, it was necessary to identify children differing in their level of curiosity and to administer selected instruments to these children. In addition, the parents whose attitudes were to be studied were also identified.

The procedure for establishing groups of children differing in curiosity is discussed fully elsewhere (140). Briefly, it consisted of the following:

1. Having each child judged by his teachers and peers on the basis of the definition of curiosity developed for this study.
2. Dividing the children into groups by sex.
3. Correlating the peer judgments made of each sex group with intelligence.
4. Repeating this procedure with teacher judgments.
5. Calculating regression equations for teacher judgment on intelligence and for peer judgment on intelligence for both boys and girls.
6. Selecting a group of girls and a group of boys whose scores differed from the regression line by ± 1 standard error on both teacher judgment and peer judgment.

7. Selecting other groups, which were added to the first groups, whose scores differed by ± ½ standard error from the regression lines on both judgments.
8. Selecting a third set of groups whose scores differed by ± 1 standard error from the regression lines for either the teacher judgment or peer judgment and less than ± ½ standard error on the other. These groups were also added to the preceding groups.

The three groups are referred to in this report as the extreme, consistent, and total curiosity groups.

In order to examine the hypotheses, instruments were sought that logically seemed appropriate for testing them with elementary school children. Some of the instruments finally selected were found on the commercial test market; others had been developed by other researchers and used in their investigations; and a few were designed specifically for the present study. These instruments were administered to all of the children in all of the classrooms involved because it was not feasible to disrupt classes by removing only selected children for testing.

In addition, instruments were sent to some of the parents to ascertain their attitudes toward children and family relations. One of them was mailed to fathers; the other to mothers. These instruments had been used by other investigators to study the attitudes of parents.

Plan of Report

This report includes four additional chapters. In the next chapter, the literature applying to the hypotheses is reported. This is not an exhaustive review. It is illustrative.

The instruments used in this investigation are described in Chapter III. This discussion includes the instruments used to establish criterion groups as well as those used to measure personal and social variables and parental attitudes.

The fourth chapter is concerned with the findings of the testing program. In this chapter, the procedures of the study are reported in detail, followed by an analysis of the results.

In the final chapter, the entire report is summarized. First, the findings are stated in terms of each hypothesis. Secondly, the characteristics of high-curiosity children as ascertained by this investigation are listed. Finally, studies suggested by the findings of the present investigation are pointed out.

CHAPTER II

REVIEW OF THE LITERATURE

For several centuries human beings have been concerned with the nature of curiosity--condoning it on the one hand and condemning it on the other. Many of these discussions have been reported as opinions regarding the value of curiosity, the apparent etiology of curiosity, and the methods of developing or retarding its growth.

Very few of these opinions were examined empirically until the twentieth century. Then many ideas were investigated through well-controlled studies with lower animals. Only recently has curiosity of human beings been the subject of research studies and, still more recently, has the curiosity of elementary school children been the area of investigation.

This review of the literature will not report on these opinions and empirical investigations. They have been treated very extensively elsewhere. Berlyne (15), in his comprehensive study directed at laying a foundation for a theory of curiosity, reported most of the pertinent literature in this field, especially the research conducted with lower species. Maw and Maw (138), in a report to the Office of Education on the measurement of curiosity, devoted a chapter to the topic. Schwartz (198) reviewed similar literature as well as that concerned with personal and social variables as part of her doctoral dissertation.

The present chapter is concerned with sampling literature pertaining to personal and social variables of elementary school children. It is the function of this review to help show the basis for deriving the hypotheses to be tested in this investigation and to clarify the nature of the problems underlying these hypotheses. For the same reasons, similar literature regarding children, their homes, and their families is included.

The review is divided into three major parts. Part I includes reports of studies and opinions regarding personal variables; Part II includes the same information as it pertains to social variables; and Part III includes reports of investigations and opinions regarding parents and home influences on children.

Personal Variables

An examination of the hypotheses stated in Chapter I indicated that there are 11 that might be considered as personal variables in contrast with social variables. This division is in a sense arbitrary since the complexity of human behavior is such that a dichotomy between intrapersonal and interpersonal behavior is difficult to establish. In order to examine in an orderly manner a large number of variables that might, to some degree, differentiate between high- and low-curiosity children, certain hypotheses which seemed related to the nature of the individual were termed "personal variables".

A further look at these 11 variables shows that all of them can be placed, at least broadly, under five rubrics. For example, problems dealing with self-direction, self-sufficiency, and level of aspiration can well be considered under the label "self". At the same time freedom from hindering anxieties and tolerance of ambiguities might be classified under "anxiety and security". In this study, the label "thought processes and motivation" includes hypotheses concerned with the thought processes and with interests and needs. The hypothesis regarding moral and ethical values is placed in a group by itself, while a category of "overall adjustment" includes literature pertaining to level of maturity, emotional balance, and general adjustment.

The self.--The use of the term "self" as a category under which to classify some of the literature bearing on the present investigation may be open to question. This arises because there is no definition of self that would be acceptable to all readers. English and English (58: 485) stated that there are two distinct concepts which appear and reappear in the technical literature. First, the self is often considered "as the subject, the agent, the individual person, the living being; or as a specific part or aspect of that being". Secondly, the self is defined "as the individual that is somehow revealed or known to himself".

As clear as this dichotomy may seem, these two concepts are seldom presented in a pure form. The definitions are often commingled by writers to the extent that the division is confused.

Some of this confusion arises because many scholars from many disciplines have contributed their efforts to understanding the self. Theologians, philosophers, and psychologists have long been concerned with this concept.

For example, many schools of psychology have dealt with the self. Those that have not--the structuralists and behaviorists--have by their very denial of it defined it. On the other hand the humanistic psychologists have placed the concept in a central position in their theories.

Another problem arises because the idea of the self has had a long history. For example, Plato discussed the existence of a soul which had a life of its own before birth, and Descartes postulated a soul, or self, residing in the pineal gland which accounted for the interactions of mind and body. Here, the self was the determiner of being (51: 289).

The domination of inquiry into the understanding of self by researchers and clinicians interested in psychological abnormalities has further complicated this problem. Although the contributions of Freud (70), Jung (105), Horney (98), and Fromm (62) had added richly in understanding the self, they have introduced many new questions because even the contributions of the psychoanalysts have not led to one acceptable, precise definition.

The psychoanalysts are primarily concerned with understanding instincts. Understanding self is related to this primary concern. Although Freud was interested in the self only toward the end of his career, Jung devoted considerably more of his writing to the topic. He stressed the idea that the self includes the ego and is the subject of one's total personality. In this he held that "the achievement of personality means nothing less than the best possible development of all that lies in a particular, single being" (106:147). He saw this as coming about as a result of a conscious differentiation from all others.

On the other hand, Horney seems to be taking a slightly different approach. This is reflected in her idea that the fullest self may not be developed by relentlessly pursuing one's aims and that giving up these pretensions may give the self its fullest meaning (99:223-224).

Fromm (72:65-66), another psychoanalyst, used Ibsen's Peer Gynt to emphasize this point. Peer Gynt devoted his energies all of his life to attain the interest of his self, only to find in the end that he had lost the very self he was trying to preserve.

In more recent years, much of the research and discussion in the area of the self has been carried out by social psychologists and others concerned with the study of the normal self. Sherif and Cantril (202), in opposition to the Freudians, saw ego and self as products of social institutions. What the self becomes depends upon perceptions that the individual has of his environment. This idea is the basis of much of the work in the area by Murphy (158) and of the phenomenological point of view of Snygg and Combs (206).

A part of this environment is the individual himself. Symonds (216:4) utilized this idea to define self as referring "to the body and mind and to bodily and mental processes as they are reacted to by the individual". Koffka (110) pointed out that the self is one of the principal elements to which the individual responds.

From this discussion, it is apparent that there exists many definitions of the self. Perhaps, as William James (102:190) stated in 1890, an individual has many selves: the self he really believes he is, the self he realistically aspires to be, the ideal self, the self he hopes to be, the self he thinks others see, the self he fears he might be now. In 1947, Cameron (33:102) reiterated this point of view and emphasized that no one ever fuses all of these selves.

In this investigation, the definition of self as seen in the writings of Maslow (129), 130, 131) seems most appropriate. Maslow sees the self as becoming fully actualized after the more basic needs of the individual are met. In his terms, this final actualization is the ultimate goal of the self, the highest need of human beings, and one few people ever attain. The characteristics of the self-actualized human being parallel so closely the hypotheses of this investigation that they are listed here for emphasis. According to Maslow (132), self-actualized people show the following characteristics:

1. Efficient perception of reality and comfortable relations with it.
2. Sincere acceptance of self, others, and nature.
3. Spontaneous behavior, especially in their inner life.
4. Active problem-centered rather than ego-centered.
5. Appreciative of solitude and privacy.
6. Independent of the culture and environment.
7. Appreciative of the basic things in life.
8. Participant in "mystic experiences" of life.
9. Profound and deep interpersonal relations.
10. Democratic in the deepest possible sense.
11. Clear on the relationship of means and ends.
12. "Older-brotherly" attitude toward others.

13. Humorous in an unhostile sense.
14. Creative in many ways.

In his study of the lives of creative personalities, Barron (10) gives much support to Maslow's ideas. He points out that creative personalities show characteristics of rebelliousness, disorderliness, and exhibitionism as well as independence of judgment, freedom of expression, novelty of construction, and insight. Assuming that creativity and curiosity are related, these are some of the variables to be investigated in this study.

Some contrasting types of research have been conducted in order to understand more clearly the development of self-acceptance and self-direction. For example Fey (63) studied the acceptance of others and acceptance of self by use of measuring instruments, while Bonthius (25) attempted to gather information in the same area by analyzing the history of Christianity. The first indicated

> "... that individuals with high self-acceptance scores tend also to accept others, to feel accepted by others, but actually to be neither more nor less accepted by others than those with low-acceptance scores. Individuals with high acceptance-of-others scores tend...to feel accepted by others, and tend toward being accepted by them".

Bonthius reported that the personality make-up of persons with healthy self-acceptance includes capability of expression, responsibility, appreciation, benevolent relationship, and the ability to be self-directed by selecting one's own goals.

It may be hypothesized that a child who is self-accepting and self-directing will also be more self-sufficient. To test this hypothesis Taylor and Combs (218) administered the California Test of Personality to sixth-grade children and divided them into "better-adjusted" and "poorer-adjusted" groups. They then asked the children to check which derogatory statements on a list applied to them. The better-adjusted group checked significantly more items. Only one who has a high level of self-acceptance and who has a feeling of competence would willingly accept such criticism.

In more general terms, White (228) and Seeman (200) dealt with the problem of competence. White studied the concept of competence and concluded that competence was the common outcome of visual exploration, activity, and manipulation, all related to what has been called curiosity. He also said that "all of these behaviors have a common biological significance, they all form part of the process whereby the animal or child learns to interact effectively with his environment". Seeman enlarged on this concept when he defined what he called "organismic integration". He said that this term suggested an underlying interaction which is adaptive and self-enhancing. It requires the blending of affective and cognitive processes.

Self-acceptance, self-direction, self-sufficiency, self-competence are not absolutes but are primarily phenomenological. However, they all seem to have a direct bearing on how realistically the child sees his potentiality for future achievement. Russell (189) stated succinctly that self-evaluation is an important factor in determining the child's level of aspiration.

In an earlier study, Sears (199) pointed out that self-confident children who are successful react by differing levels of aspiration in a consistent success-oriented fashion, while children lacking in self-confidence are erratic and inconsistent in their reactions. Cohen (42), using data obtained from Rorschach protocols, confirmed to a large extent this finding. He did not find that goal setting was related to a feeling of adequacy but that it was related to the level of acceptance the children had of themselves.

These findings seem to indicate that children with a high level of self-acceptance are prepared to move out and away from any guard they might have around their "selves", while low self-accepting children will go only in the direction that will protect their "selves". Mahone's (125) study supported this contention. His results showed that if the person were strongly motivated to avoid failure, he tended to set unrealistic vocational goals and not goals where he had to actually prove himself. He also had a low estimate of himself. High self-accepting people set realistic vocational goals and were quite willing to prove themselves. They were found to be strongly motivated to achieve success. This finding tended to confirm the results of a similar study completed in Australia by Leather (116) in 1958.

Anxiety. -- The level-of-aspiration manifested by a child seems to be determined to some extent by his level of anxiety. Mandler and Sarason (126) studied the effect of experience and subjective failure on test anxiety. They found that increased experience decreased the effect of high anxiety on test performance and that a low self-estimate of performance is more highly correlated with poor performance in highly anxious children than it is in children with low anxiety.

After the above study, Sarason headed a group concerned primarily with the study of test anxiety in children(193). It was assumed that the findings regarding test anxiety would illuminate the understanding of other forms of anxiety. Four aspects of this report have special significance for the present study (193:1-2). First, the anxiety study like the curiosity study was limited by the "ambiguities in theoretical formulation, the absence of validated methodologies, and the paucity of previous systematic research". Secondly, some of the variables studied and methods used are similar in both investigations. Thirdly, both studies are exploratory in nature and the results seem to indicate that each of the findings need to be studied more intensively. Lastly, much of the significant literature pertaining to the anxiety of children was reviewed.

Sarason, et al. (1933) found that there was a "lack of systematic studies of specific anxieties". In addition, after studying the writings of Bornstein (26), Sullivan (214), Gershman (75), Erickson (59), May (147), Thompson (221), Mussen and Conger (159), Almy (6), and White (229), they concluded that although their theories differed in many aspects, "they were more similar than...different". In fact, they differed so little from the Freudian conceptualization of anxiety that these writers accepted the psychoanalytical theory as the underlying theory of their own research (68, 69, 71).

In accepting the Freudian definition of anxiety, Sarason, et al. look upon it as a phenomenon whose development depends upon the experience of the individual. It begins to manifest itself immediately after birth--although there is evidence that it has prenatal origins--as "automatic reaction to danger". It later takes on a "signaling function" and gives the child an opportunity to build his preventive and protective measures. The methods used become essentially "basic determinants of personality and character". When the repertoire of the individual is varied and flexible, the methods and procedures are usually adaptive. When they are rigid and limited the child's defenses are often inappropriate. Often the anxiety symptoms exhibited have a moral rather than a physical basis. The individual's reaction to "moral" or "social" anxieties is again a reflection of his personality structure. Freud's definition of anxiety, then, included the ideas that anxiety is unpleasant, has physiological concomitants, and is consciously experienced.

Since the way the child handles anxiety is a basic aspect of his personality structure, and since it is hypothesized that the manner in which children manifest curiosity is also related to certain personal variables, it was expected that some of the same areas would be examined. This was found to be the case not only in terms of the variables, but also in the nature of some of the procedures and populations used. For example, the hypothesis that the home and family were significant experiences in the development of anxiety corresponds to the feeling on the part of the investigators of the present study that the level of curiosity of a child is a function of the home and family environment. Such variables as sex, achievement, and self-acceptance are also examined in both studies.

The results of the studies of Sarason *et al*. are essentially directional in that they actually suggest further research in areas rather than give answers that are more than suggestive for the handling of children who are highly anxious. Sarason *et al*. concluded, for example, that "sex differences are extremely pervasive in personality organization", and suggested studies of personality variables should be carried out with separate sex samples. The earlier and preliminary studies of curiosity tended to verify this finding. For this reason, the analyses of the present study are based on such samples.

Although Sarason *et al*. did review much of the literature, it seemed to these writers that non-psychoanalytic studies were not considered as completely as the more psychoanalytic writings. Therefore, a sample of non-psychoanalytic research studies is reported in this review.

Rogers (184:90) hypothesized that the "more the self...is threatened, the more he will exhibit neurotic behavior, and...the more his ways of being and behavior will be constricted". He further hypothesized that the "more the self is free from threat, the more the individual will exhibit self-affirming behavior, and...the more he will exhibit the need for, and the actualization of, participant behavior".

Certain studies on tolerance of ambiguity tend to support these hypotheses. Muuss (160) stated that:

> Tolerance toward an ambiguous stimulus might be considered as an indicator of mental health since the individual seems to be more realistic in his evaluation of the world around him, more aware of his own limitations, and more willing to admit that he does not know the answer to the problem. Intolerance of ambiguity...indicates a need to structure the world even at the expense of neglecting reality.

These statements were tested by Smock (205) who examined the influence of psychological stress on "intolerance of ambiguity and ethnocentrism. O'Connor (164) calculated a correlation of .55 between these two variables, while Levitt (119) found a correlation of .39 between the Children's Anti-democratic Attitude Scale and the Decision Location Test. Levitt also said that those who were intolerant of ambiguity also accepted more of the popular superstitions than did others.

The latter is confirmed to some extent by the factor analysis studies of Cattell and Scheier (39). Among the variables in the "loading pattern" for a factor designated as anxiety are "high tendency to agree" with a loading of .38 and "slow speed of perceptual judgment" with a loading of .18 (38). Another variable, "high self-criticism" loading .19--corroborates to some extent the relationship of anxiety to low self acceptance.

Other research findings have emphasized the relationship between the self-concept and anxiety. Lipsett (121), working with sixth-grade children, and Feldhusen and Thurston (62), studying fifth-grade children, showed that highly anxious children have low self-concepts. Both investigations employed the Children's Manifest Anxiety Scale (36).

The effects of anxiety on learning have also been investigated. Schachtel (194) considered this to be a perceptual problem. He pointed out that those individuals who are perceptually open to the world and new experiences are less anxious. They are also likely to be creative. Rigid, anxious individuals, on the other hand, are not very original and tend to seek security in ritual. Ausubel et al. (8) felt that the novel elements of the learning situation aroused the anxiety in the learner but, according to the research of Brim and Hoff (28), the experience of frustration in earlier learning seemed to increase the "desire for certainty" or early closure.

The relation of anxiety and learning and the relation of anxiety and curiosity are still open to considerable question. Both Symonds (217) and Reed (182) reported that "severe and very low levels of anxiety tend to depress learning and that mild anxiety may tend to function in a positive manner for some kinds of learning".

Part of this paradox may be attributed to the lack of precision in the definition of anxiety. One of the answers to this problem has come from factor analysis studies. Cattell (38) stated that "factor analysis...succeeds in sorting out anxiety from two things with which it is constantly confused: the stress reaction and neurotic-personality maladjustment".

Thought processes and motivation. -- Self concept, the feeling of security, and level of aspiration seem to be intimately connected with the thought processes and motivation. They seem to be related to such areas as problem solving, creativity, and curiosity. The exact nature of these relationships is not very well understood. There seem, however, to be types or levels of adjustment that must be made before the organism feels secure in moving out to seek new solutions to problems. A poor self concept, a feeling of anxiety, and an inconsistent level of aspiration all tend to force the individual to seek early closure (28). Thus, novelty and originality in problem solving are not sought.

Maslow (130) stated that "needs arrange themselves in a fairly definite hierarchy". He pointed out that physiological needs, safety needs, love and belonging needs, and esteem needs all have to be satisfied before self-actualizing needs (129). If this idea is united with a statement made by Gough (74) that one is most creative when one is most himself, when one is expressing "most fully, deeply, and completely his individuality," a clearer understanding of the relationship is gained.

Maslow (129) also considered the relationship of the thought processes and motivation. He wrote:

> If we remember that the cognitive capacities (perceptual, intellectual, learning) are a set of adjunctive tools, which have, among other functions, that of satisfaction of our basic needs, then it is clear that any danger to them, any deprivation or blocking of their free use, must also be directly threatening to the basic needs themselves. Such a statement is a partial solution of the general problem of curiosity, the search for knowledge, truth and wisdom, and the ever-persistent urge to solve the cosmic mysteries.

The nature of problem solving, motivation, and curiosity has been studied by Berlyne. He considered the existence of at least two kinds of curiosity--perceptual and epistemic (12). The first is quite similar to mere scanning, while the latter is concerned with the seeking of knowledge. He also discovered that novelty, surprisingness, complexity, and incongruity are significant in curiosity arousal. These are basic in his theory of collative motivation (13). Each of these characteristics of the situation has more or less effect on the learner and, in part, these effects are dependent upon the level of self acceptance, self-sufficiency, and the feeling of security of the individual. Berlyne (17) claimed that "discovery of truth depends on ability to recognize problems". Such recognition is difficult when the child directs his anxious attention inward in order to seek some security by restricting his area of contact.

Fuller (73:40) amplified this conclusion from a more strictly biological point of view. He discussed preemptive drives and expressive drives. The former function primarily when the organism recognizes an emergency. The possibility of pain, fatigue, or fear emphasizes the preemptive drives. Expressive drives, on the other hand, serve the organism by obtaining an increasing amount of information from the environment in order for the organism to function more effectively. Fuller pointed out that higher organisms, if not overcome with dangers--real or imaginery, "take care of their preemptive drives very efficiently with as little effort as possible....The main business of life,...is reinforcing their expressive drives."

The problem of seeking information from the environment remains an area needing more research. Why a certain level of information seems to increase curiosity while an increased level of information does not remains an unanswered question (191). The answer probably lies in the area of thinking and motivation, but where it lies is unknown. Part of the answer may lie in the specificity of the needs of the organism. In a study of children from different socio-economic backgrounds, Marks (127) found that "motivational factors may influence the cognitive appreciation of the situation in the direction of need satisfaction". Berlyne agreed (18) that both information theorists and behavior theorists may join forces in seeking an answer.

The complexity of the thought processes were examined by Shafer (201), who concluded that associative processes are directed by several determinants, namely: the nature of the environment, emotional memories, the organism's conventional thought patterns, and emotional anticipation. In addition, he concluded that the process is successful to the degree that present thinking is free from emotional charge.

It appears, then, that creative thinking becomes increasingly probable to the extent that the thinker is willing to take a risk, reaching out to make more areas of life accessible. In light of the definition used in this investigation, this means an increased level of curiosity. Interestingly enough, Roe (183) indicated that curiosity was a basic drive and that it was found in all scientists. Patrick (168) showed that without curiosity or exploratory behavior creativity in the arts was impossible since the thinking process resulted in more changes in the first quarter of creativity than at any other period. It is during this period that the organism is seeking to familiarize itself with the problem by reaching out into new areas.

Some writers, for example, Getzels and Jackson (76) did not find the close relationship among creativity, curiosity and intelligence implied in foregoing statements. Their research, however, was limited to children with very high IQ's and suggests that after the organism has reached an optimum level in one or the other--intelligence or curiosity, creative thinking can flourish and develop out of proportion to the other two.

More detailed studies of creativity and creative thinking are reviewed by Bruner (30), Bruner _et al._ (31), and Guilford (82). Attempts to study critical thinking in the classroom were reported by Torrance (223, 224), Glaser (77), and Maw (134, 135). All three were concerned with ways of improving these abilities in the classroom. They are not reviewed here nor is there any attempt made to review Russell's (189) comprehensive book on children's thinking which includes most of the significant studies in this area to the date of its publication.

Another procedure used to study aspects of children's motivation is the investigation of their play activities and other interests. One of the early and definitive works in this area was carried out by Lehman and Witty in 1927 (117). They attempted to show how play activities and the psychological needs of the child changed with growth and development. A briefer but similar report was presented by Foster in 1930 (65).

Later research in this area was more complex and sought answers to the relationships between specific personal and social variables and play activities. In 1950 Cattell (37:409) reported on a study by Boynton and Wang (27) in which they indicated that "play interests show less aspects of culture". They presented a 108-item play inventory to 1800 children in the intermediate grades and found class differences significant in only 19 of them.

Others had also looked to analyses of children's interests in order to understand personal and social behavior. For example, Sutton-Smith and Rosenberg (215) were concerned with children's feeling of security and the type of games they played. They found that "game choices of high anxious boys were not only feminine, they were also immature, and that some of the game choices of highly anxious girls were both masculine and above average in maturity level".

All of these studies under "thought processes and motivation," although limited in number, suggest that the restricted personality--the individual whose fullest development is hindered in any way and especially through overriding anxieties--will not reach out to solve problems, to create new methods or materials, and will not risk activities that may be threatening. In other words, this person will not be curious. He will try to conform to the narrowest area of behavior. He will be less intellectually effective, have less ego strength, and exhibit less leadership ability and maturity in social relations than those who can freely follow independently their own perceptions (49).

Moral and ethical values. -- Such conformity may not be reflected in a higher degree of moral maturity. This is especially true at the time when conditions change rapidly with many factors creating the change. The child who rigidly conforms at one time may not be able to meet the moral challenges of a later period. Hemming (93) points this out when he states that "moral maturity in a democracy is characterized by the attainment of moral autonomy rather than by the absorption of a precise code, and by the search for a set of trans-cultural values which have universal validity".

The development of moral autonomy in the individual is complex, and few researchers have attempted to hypothesize how it takes place. Many of the studies that have been carried out have tested hypotheses set forth by Piaget (174), who hypothesized that as the child increased his relationships with his peers, he decreased his acceptance of parental absolutism; at the same time his moral views became more flexible. This hypothesis would be in line with the ideas regarding curiosity as set forth in this paper. By the definition of curiosity used in this investigation, the higher the curiosity of the child, the more he would move away from the status quo and the more he would assimilate and accommodate diversity of moral opinions, attitudes, and behavior.

However, the research does not tend to support, in all cases, Piaget's position. Using stories of rule infractions designed by Piaget and his co-workers, Boehm and Nass (22) found that responses were specific depending on the story. They also found social-class differences in responses as well as differences based upon IQ. In a slightly different approach to the study of values, Pope (177) contrasted the responses of 400 sixth-grade pupils as to the peer culture prestige values of different socio-economic groups. He found differences between boys and girls at all socio-economic levels, but he found that both boys and girls of higher socio-economic status tended to place higher value on conformity to adult standards and conventional rules of conduct than did boys and girls of lower socio-economic status. The latter placed much emphasis on self assertion and aggression.

Johnson (103) studied midwestern children using Piaget-type stories and a parent attitude questionnaire developed by Shoben. He hypothesized that children whose parents were dominating and possessive would be less mature in their moral judgments than children whose parents showed contrasting characteristics. He further hypothesized that children who were ignored by their parents would develop more mature moral judgments. Interestingly enough, his study revealed the opposite to be the case.

It is quite likely that there is an optimum level of parental and peer influence functioning at different somatic and mental levels of maturity and these influences may vary in different socio-economic environments. Although there has been little evidence to support the position, it may be that most of these influences work to produce curvilinear rather than linear relationships.

Peer groups do seem to play a significant role in moral development. Crane (48) asked teachers-college students to discuss the nature of their preadolescent gangs. About 90 per cent of the men and 40 per cent of the women revealed gang membership between eight and 13 years of age. Boys' gangs participated often in socially disapproved activities; girls' groups tended to support socially approved programs of recreation. Crane pointed out that the preadolescent gang served as a transitional stage in the attainment of status in the adult society where such status was based on achievement. The more than 2 to 1 ratio of gang membership of boys and girls suggests that there may be considerable difference in the overall effect of peer groups on the development of moral maturity in the sexes.

The value system that a child uses apparently operates in a global fashion and is related to the child's self concept. His system does seem to be related at least to age (150), health (210), identification with parents (213), socio-economic status (22), peer group affiliation (48), and intelligence (230). The commingling and weight of each of these, as well as many other possible influences, leave this area of moral development a fertile field for research.

The level of moral maturity reached by the child seems to be related in some way to the extent of his social perceptions. Where he adheres in an exaggerated manner to conventional values such as cleanliness and order, he may also be highly prejudiced toward others who differ from him in these matters (67). Thus, one basis of ethnic prejudice may possibly be in this area.

The role of curiosity and moral maturity has long been a subject of discussion. Ecclesiasticus (57) warned against too much curiosity while Trevelyan (225) wrote in the preface to his English Social History, "disinterested intellectual curiosity is the life blood of real civilization". Nunberg (163:78-79), a Freudian psychoanalyst, tried to encompass both points of view when he concluded his paper on curiosity as follows:

> Curiosity and the need for causality are boundless. There are individuals whose urge to know is unlimited and whose ego seems to lose control over this urge and becomes its prisoner. Individuals of this type may be utterly ruthless in their avidity for knowledge and totally unconcerned with the possible consequences of their search. They may not even be deterred by the prospect of comprehensive destruction, including their own, when they hope to come closer to their goal. One gets the impression that the pure instinct of destruction has been released in them. Indeed, Freud says that with sublimation there occurs not only desexualization but at the same time a defusion of the two groups of instincts which sets destructive instincts free. Since infantile sexual curiosity as such contains an aggressive element, we might say that the explorer, in a sense, returns to the level of the child who ruthlessly tries to satisfy his curiosity. Curiosity may, on the one hand, be a blessing and stimulate intellectual performances of the highest value; on the other hand, it may lead to

> destruction if too much aggression is released. We may, perhaps, take comfort from the observation that nature often enhances the creative and constructive forces when excessive destructive power has been freed.

Overall personal maturity and adjustment. -- In the earlier parts of this review of literature pertaining to personal variables, much of what can be said about overall personal maturity, personal adjustment, and emotional balance has already been discussed. In fact, the literature reviewed indicated that, to a large extent, personal variables are probably interrelated in such a way that it is the holistic aspect of the personality rather than any single variable which is of most importance.

It was also implied that the nature of maturity varies according to the cultural and sex group to which the individual belongs. Since what might be considered mature behavior under one set of circumstances may be thought to be immature in others, psychological maturity requires an individual to function effectively and efficiently regardless of the environmental situation. Pear (170), attempted to define maturity under such changeable conditions. He pointed out that psychological maturity is not conformance to group mores but rather

> the possession of a self-regarding sentiment sufficiently integrated and powerful to prevent its possessor from being unduly influenced, in thought or action, by apprehension concerning the opinions of him which others may hold, and the possible change of emotional attitudes which they may display towards him as a result of his deliberate action in important though disputable matters.

In line with this definition, Spache (208) claimed that teaching should facilitate the maturation of the self-concept and help it to be more consistent and integrated. It is hypothesized in the present investigation that the curiosity level of a child is related to his self-development and self-sufficiency. It is also hypothesized that "parents of high-curiosity children are more democratic in their child-rearing practices than are parents of low-curiosity chidren". If a child's curiosity and his self-development are positively related, then whatever aids the development of one probably is a force in the development of the other. McCreary (149) wrote that personal adjustment, including self-discipline, emotional and intellectual maturity, independence, social adjustment and social maturity depend, to a large extent, upon consistency in parental control and guidance and in the gradual release of restrictions as the child grows older.

The contribution of parents to the development of overall personal adjustment and emotional stability must not be underestimated. Little (122) maintains that many complex factors contribute to emotional stability. He pointed out the following as being among the more significant contributors:

1. Reasonable calm,happy, satisfactory experience during the first few years of a child's life assuring good "resistance" to subsequent disturbing factors and situations.
2. Social and economic security of the child and his parents.
3. The emotional adjustment of the parents.

It seems logical that such overall adjustment should have a bearing on the level of curiosity of school children. If curiosity is a positive personality trait, then it is reasonable to assume that the study of Davids and Parenti (52) would apply to curiosity as it did to other personality characteristics. They found a significant relationship among such variables as good emotional adjustment, social popularity, and other positive personality traits.

Ogden and Olson (165) pursued this question further. They studied 2516 fourth-grade pupils in the State of Colorado, dividing these children into three groups: those free from emotional handicap, borderline cases, and those with emotional handicaps. They administered Form C of the You Test (146), which was a test of curiosity devised by the investigators of this study. Ogden and Olson reported significant differences among the means of these groups. They also reported that within the top five percent in curiosity, there were significantly fewer children identified as emotionally handicapped.

All of these findings and points of view seem to bear directly on the learning process. This is encouraging, since it is an underlying assumption that by studying curiosity in the school environment, some benefits will accrue to the improvement of the teaching-learning process. If emotional stability is related to curiosity, and if emotional insecurity is the basic cause of most educational disabilities and learning failures which are not due to mental defects (148), then it is likely that any forces improving emotional stability probably will increase the level of curiosity. Certainly the circumstances which McCarthy proposed as increasing the efficiency of learning are similar to some of the conditions hypothesized as underlying curiosity. She stated that easy adjustment in early life was more conducive to learning than were constant frustrating and fear producing situations. The latter would tend to cause a child to become withdrawn or aggressive in order to find ego-satisfaction.

Social Variables

After reviewing the literature classified as bearing on personal variables, it becomes even more apparent that the division between personal and social variables is at best an artificial one. A clear-cut dichotomy does not exist. This lack of division is especially striking when the variable social prejudice is considered. Although related to personal adjustment, it still has, of course, social implications. It is for this reason that a part of this section is devoted to discussing social prejudice, although it has been mentioned when reporting literature listed for convenience in this study as applying to the understanding of personal variables.

Perhaps the skillful participation in group activities can be more realistically considered under social variables, but even here the nature of the self-concept plays an overriding role. With full knowledge of this limitation, it seemed appropriate, for this study, to consider in this section the literature bearing on social participation.

In addition, some space is devoted to overall social adjustment. This includes, not only information dealing with overall social adjustment itself, but with something called social maturity and responsibility for group welfare.

It is noticeable that there are fewer subsections in the division on social variables than in the part devoted to personal variables. Part of this may be due to the problem of dichotomizing these two major sections and part of it may be due to the fact that the literature bearing on one of the child's major social environments, namely the family, is discussed separately as a unit. However, references are made to it under both personal variables and social variables.

Social prejudice.-- Stock (211), in a study of the self concept and the feelings held of persons and groups who differ from one's self, found that "there is a definite relationship between the way an individual feels about himself and the way he feels about other persons". In other words, the child who has achieved a sense of self-direction and self-sufficiency and is beginning to see himself as a worthy person is able to accept other persons as being as worthy as he. This type of person has little prejudice and would be a good world citizen.

The development of such a child is very complicated. It requires, according to Havighurst (92), that: (a) he be rewarded for constructive behavior which is within a child's power to perform; (b) he relate well to his family, his neighborhood, his school, and his community; and, above all, (c) that he have a wide variety of social experiences with people who differ in many ways.

Where the experiences of the child are restricted or where these experiences are of a "defensive, escapist, or ethnocentric nature, the child is very apt to be prejudiced toward those who differ from him. Therefore, if the objective is to develop children with little prejudice, they should be exposed to experiences that will lead to a comprehensive and integrated life" (4). This simply means that the conditions that are conducive to the development of the self-actualized person, as defined by Maslow, are to a large extent the same conditions that will lessen the social prejudice of that person.

The child, however, usually has experienced conditions leading to prejudice or situations that help him become non-prejudiced before he enters school. The type of response a child will make to people who differ from himself is present as early as three years of age (114). Children develop these responses more by the acceptance of the attitudes of adults with whom they live than because of their own interpersonal experiences (181). In a sense, the idea that the attitude of adults is more significant than experience seems to be contradictory to some of the statements made earlier when it was suggested that the quality of experience might aid in the elimination of social prejudice. However, since most of the experiences of the young child are selected by parents and other adults close to him, and these experiences are selected in terms of a value system from which attitudes are derived, it is seen that there are really no conflicts in these statements.

It is clear that the prejudice level of children is very similar to that of their parents. In a study conducted by Frenkel-Brunswick (66) it was found that children who were rated as prejudiced were illiberal, rigid, dichotomous, and primitive in their behavior and their parents showed the same type of behavioral responses.

The development of prejudice in the child causes him to delimit his experiences in many ways. He begins to devalue others and then suspects them of being a threat to him. He becomes insecure and anxious about his own welfare (186). He either limits his contacts to protect his own sense of worth or as his fears, hostilities, feelings of inadequacy, and anxieties increase, he looks for a scapegoat (167).

These prejudiced attitudes are reflected in the quality and quantity of the child's thought processes. Keitner (112), after studying seven-year-old children who were rated as either "prejudiced" or "unprejudiced", concluded that prejudice is closely related to "mental rigidity", "intolerance for ambiguity", "need for control", and "mastery over the situation". It is highly probable that such rigidity also tends to lessen the creative responses of the child. Barron (10:81), who studied the lives of effective, creative persons, indicated that any prejudice might tend to lessen creative ability. Specifically, he reported that "the social organization that fosters prejudice might well be forfeiting the kind of emotional flexibility that is necessary in time of crisis if it is to cure its own ills."

Clark (41) pointed out that social prejudice is damaging to both the child who is prejudiced and to the child against whom the prejudice is directed. The former tends to develop an immature personality which will make him ineffective in many other ways. Such ineffectiveness tends to increase a sense of frustration which may again increase the expression of prejudice (44). Thus, the circularity of prejudice, immaturity, and frustration becomes apparent. In such a cycle the development of curiosity, as defined in this investigation, probably is depressed or, at least, retarded.

Social participation.-- Social participation can be considered under two broad categories: the actual nature of the participation itself and the skill utilized in social participation.

It was stated earlier that, at least to some extent, the social experiences of the child contribute to the formation of his attitudes toward others. There is also considerable evidence that one's attitudes are also influenced by his position in the social system within which the experiences occur (96).

Although there is little evidence available on the effects of social membership on the level of curiosity, there are several articles which indicate that many kinds of behavior do depend upon the quality of social experience. For example, Denter and Mackler (54) felt that originality occurred only in a social context and that the quality of the social context either aided or impeded "the novelty of the subject's responses".

It is reasonable to assume that the nature of one's social participation is related in some way to one's curiosity level, or that both are related to a common antecedent. Such an assumption is reasonable because social participation is usually approached by the complete person (5). In participation the individual utilizes in some manner all of his abilities, skills, and attitudes in order to play the role he wishes.

The relationship of personal variables to social participation was shown in a study carried out by Phillips and DeVault (173) with 250 seventh-grade children. In this investigation, the frequency of positive and negative sociometric choices was related to scores earned on the subtests of the _California Test of Personality_. The results indicated a relationship between one's social position among his classmates and some aspects of personality adjustment as measured by this test of personality.

The attractiveness of being accepted by one's peers was not the same for all children. Although all persons like to be accepted in a group, persons with low self-esteem have a stronger need for such acceptance (56). If this need is of sufficient strength, it will hinder the development of the individual. On the other hand, since that child with high self-esteem has less need for group acceptance, he is free to be more concerned about things that are of no value to the group.

It should not be construed that well adjusted children have no need for social participation. All children seek relentlessly to belong. Those who attain general social acceptance have been found to have good physical health, to show considerable vigor, to be emotionally stable, socially aggressive, adaptable, dependable and tolerant. They are often motivated for social service and willingly provide new experiences for others. They also are themselves somewhat dependent on others for assistance and emotional support and are very willing to conform to the expectations of the group (24).

The last group of characteristics is more likely to be manifest in children who hold a low self-esteem than by those who have a higher level of self-esteem.

It might be expected that the school would contribute to social acceptance. Quite often, however, the opposite is the case. Sonstegard (207) reported that "because acceptance by peers often involves successful competition, the social climate in the classroom is neither optimum for personality growth nor helpful to those children who feel they have not achieved enough".

It is apparent that much could be done in schools to help children become better adjusted socially. Foshay (64) claimed that the most important agent in setting up the classroom climate for this is the teacher. It is the function of the teacher to help children develop those personal characteristics that will contribute to building such a climate in the classroom. This means setting up conditions that will aid in developing a feeling of security and a sense of belonging (209).

Social skills necessary for effective social participation are dependent in many ways upon the development of certain personality characteristics. Their exact nature and the extent to which they function is modified by the age of the child, the structure of the group, and the role the child is playing in the group. Interestingly, many of these personal variables are quite similar to those hypothesized as being important in the differentiation of children with high and low curiosity.

The gaining of skills in social relations is similar to many other learning experiences. Readiness for social interaction is required before one can learn to be socially responsive and interactive (212).

As the child becomes more responsive, he learns to work with others in defining the problems, discussing them, and carrying out the programs of action of the group. In order to do this, he must learn the skills necessary to destructure his own ideas regarding the problem and then to restructure them in terms of the views of the group (7). Since this behavior involves considerable tension, it can be handled most effectively by individuals who are flexible and who have developed a reasonable degree of self-acceptance.

The skill or skills utilized by a person to work with others in the solution of mutual problems depends, in part, on one's preference for cooperation. In a study by Perrodin (171), the Behavior Preference Record was administered to 352 children whose ages ranged from nine through 14. He found that:

1. Boys tended to score higher in preferences for cooperation than did girls.

2. Stability of home and school life had a slightly favorable effect upon children's preferences for cooperation.

3. Participation in YMCA or YWCA children's activities appeared to have a closer relationship to preferences for cooperation than did participation in other community activities.

4. Preference for cooperation did not seem to be a factor related to a child's popularity with his classmates except when it came to making choices for the school council and the school safety patrol.

5. Children who watched television twenty hours or more per week expressed greater preferences for cooperative behavior than did those who viewed television a lesser number of hours.

6. Children who read extensively indicated greater preferences for cooperative behavior than those less interested and those less capable of reading.

Both television viewing and the reading of books increase the vicarious experiences of children. Such behavior increases the opportunity of children to learn how to live more adequately in all areas of life, including interaction with others. It has been recognized (123) that feelings of inadequacy are often linked with feelings of resentment toward others. Such feelings often lead to intolerance, prejudice, and the negative modification of cooperative actions.

It was suggested above that readiness was definitely necessary in the development of social participation. In part this is shown in increased social perception of what others are concerned about (180). If such perceptions are not clear, false relationships with people with whom one differs may develop. On the other hand, although the perceptions may be quite clear, in the absence of other personal characteristics they may be the basis for the knowledge

2

of how to gain desired social responses from others with intentions that may be more selfish than altruistic.

The development of social participation often depends as much upon the nature of the group as the nature of the participant. Hewitt and Gildea (95) worked with children whose ages ranged from seven to nine and who were having problems in social adjustment. They organized these children into smaller groups of five pupils each, four of whom were having difficulties in social interaction and one who was not. After meeting four times per week for two months in group therapy, these children became much better adjusted in the larger group. Kinney (109) studied groups of fifth-grade classes. She found that small flexible groups were more conducive to the development of some socializing characteristics than were ability groups or large class-size groups.

The skills of group participation are seen most clearly in the demonstration of leadership ability. For example, Van Dusen (226) asked 245 Boy Scouts to name three boys who would make the best patrol leaders and three who would make the worst. Nominations were accompanied by statements regarding the reasons for the selection. Van Dusen studied these statements and concluded that leadership required: (a) a strong interest and knowledge of problems of the group in which the leadership is required, (b) ability to stimulate cooperation, (c) adaptability to the wishes and needs of others, and (d) honesty, trustworthiness, and other good habits. These findings correspond to those found by Mason (133) when she investigated the characteristics of leadership in the fourth grade. She reported that leaders are dependable and able to finish an assigned task, have average intelligence, show leadership in all aspects of school life, and possess mature personality characteristics not usually found in non-leaders. Among such characteristics are the skills needed to contribute to decision making with ideas and information and to develop a friendly atmosphere where joint labor and effort will help in the formulation of policy and in the solution of problems.

The analysis of the nature of social participation and some of the skills involved in such participation suggests that, to some extent, there may be a relationship between healthy participation in group activities and such behavior as curiosity. Since both seem to require the ability to reach out beyond the self, an advanced stage of self-conceptualization, and a degree of flexibility, cooperativeness, and friendliness, as well as a high level of maturity, it is probably important that any relationships that might exist between social participation and curiosity should also be studied.

Overall Social Adjustment.-- The fact that a number of social variables seem to be related to problems of social participation raises the question as to whether it is the overall social adjustment of the individual that is important to such participation. On the other hand, one could show skills in this area either if he had a large quantity or considerable quality in one of the necessary attributes or if he were similarly endowed with a reasonable quantity or quality in many of these areas.

These ideas led to the formulation of hypotheses in which the overall social adjustment was considered in relation to children differing in curiosity. It was hypothesized that children high in curiosity would be those with the highest overall social adjustment.

This relationship was predicated on the assumption that social adjustment included at least three aspects. First, since it was assumed that high-curiosity children would be more aware and thus more sensitive to their social environments, they would also want to accept more responsibility for the social milieu than would their less curious counterparts. Secondly, and not unrelated to the first, these high-curiosity children would have reached a higher level of social maturity than low-curiosity children. Finally, the high group, being more responsible and more mature, would show in their behavior a somewhat higher overall level of social adjustment than those who had been rated in the low group by their teachers and peers.

The development of a sense of responsibility requires considerable time. Buytendijk (32) discussed the development of responsibility from the first level of experienced freedom to the acceptance of moral freedom in which one feels responsible for the welfare of others. Buytendijk set forth the following stages in this development:

1. The first stage involves refusals, resistance, and revolt.
2. The second stage is reached through the consciousness of conquest, through experiencing the thing conquered as a positive value.

3. The third stage, which comes much later, is based on experiences of surprise, admiration, and objective obligation. These experiences result in the formation of a sense of moral freedom and creative responsibility.

4. Finally, if the development has not been curtailed, children modify their freedoms of caprice and conquest and through cooperation and interpersonal relationships build a "we" feeling of responsibility.

It is apparent from general observation that this level of development depends first of all on the child's experiencing some freedom on which to build and secondly upon the proper social climate in which the changes can occur. There is little research on which to base programs of education for responsibility. If the highest sense of responsibility is attained through cooperation and interpersonal relationships, as suggested in stage four above, then the mere assignment of home or school tasks to the child will not suffice in the development of this attribute. Harris et al. (88) studied this problem and concluded that "there is little evidence that the household routine tasks...are associated with an attitude of responsibility".

Harris et al. (87) continued their investigations into this area. They used the Guttman scale analysis of a citizenship measure of responsibility and a teacher's checklist and obtained seven dimensions of personality which differentiated responsible and less responsible children. Most, but not all, of these dimensions corresponded with those hypothesized in this study for curious and less curious children. Those dimensions corresponding to the hypotheses of the present investigation are:

1. Possession of constructive interests.
2. Personal independence.
3. Lack of group-centeredness.
4. Strong and non-authoritarian personality.
5. Dependability in carrying out tasks.

Those dimensions which, at this time seem to be the antithesis of curiosity are:

1. Conformity to social norms.
2. Conformity to the expectations of the larger society.

Future investigations, however, are necessary in order to clarify the relationship between conformity and curiosity.

This question is one that requires considerable study, especially in relation to curriculum development. If curiosity is limited or curtailed by an overemphasis on conformity, then anything done to increase conformity will lessen curiosity. Yet, according to Cattell (37:402-403), "the school specifically operates to produce individuals with the personality stereotype required to run the adult culture group".

Are the schools, by this process, developing citizens with the highest level of social maturity? The answer appears to be dependent upon the degree of the conformity. This, in turn, is probably reflected in the level of emotional security achieved by the child. Bromberg (29) pointed out that social maturity depends largely upon the emotional atmosphere surrounding the child in his formative years. For this reason it was considered important by the investigators of the present research to examine some of the attitudes of parents regarding child-rearing. Some of the literature bearing on this area will be discussed in the next part of this chapter.

There is some evidence that an environment which encourages the moving out from an egocentric and self-restricting behavior and which leads to the development of social extroversion also leads to a higher level of social maturity (60). Care has to be exercised in distinguishing social extroversion from emotional extroversion. The latter is shown by an insecure, anxious person who makes poor emotional adjustment. This person would probably score low on almost any criterion of social maturity.

The socially mature individual is one who is reasonably content, able to perform appropriate tasks, able to live through ordinary stress without disintegrating, and not impelled to injure others (120). He is usually concerned with a cause and will work with others cooperatively for this cause.

It is essential that the phrase "reasonably content" be examined. For socially mature individuals this cannot mean adjustment to the status quo. If to be "adjusted" means to be a rigid conformist, then truly mature or integrated people are not "adjusted" people (45). They are not conformists; they are reconstructionists constantly creating, ordering, and harmonizing their lives on an ever increasing and developing higher level of efficiency and achievement.

In order to increase one's excellence in an ever-changing social milieu, one must be able to respond quickly to that environment. One must be able to perceive changes quickly and with this awareness reconstruct one's life in a satisfactory manner. If this reorganization is not to be conformity, it requires stability of mood, self-assurance, efficient organization without finicky attention to detail, and a feeling of acceptance by others (179).

In addition, it is hypothesized that a child who is well adjusted, in the sense the term is used here, is also highly curious about his surroundings. Some of the findings of a previous study by the authors (138:285-288) indicated a possible link between curiosity and perception, especially in connection with the "Foolish-Sayings" test which required the children to identify which sentences contained a degree of humor. A similar relationship is also reported between social adjustment and perception.

Chodorkoff (40), in his study of the relationship between personal adjustment and perceptual defense, considered a person to be highly adjusted if his own self-description did not vary too much from a description made by a clinician after the administration of a test battery. He measured perceptual defense by determining the time of recognition of neutral and threatening words when shown on a tachistoscope and found that the highly adjusted individual was able to "differentiate and symbolize the threat more adequately than persons rated lower in adjustment". Indeed, he found that "the individuals in the upper adjustment groups actually recognized the threatening words more quickly than they recognized neutral words".

Most of the qualities suggested as bearing on overall social adjustment seem to be those necessary for a child to have if he is not to be overcome with fear and anxiety when he desires to scan his environment looking for new knowledges about himself and his environment, especially his social environment. If other words, it is the highly curious child who persists in this endeavor in order to develop fully the social skills necessary for high-level participation. If this last statement is true, then the hypotheses generated for the present investigation, which are concerned with social adjustment, are at least reasonable.

Home and Family Variables

The child's home and family constitute the social milieu in which he spends most of his time. Therefore, it seemed appropriate that, after looking at personal and social variables which seemed to differentiate high-curiosity children from low-curiosity children, some attempt should be made to study the family environment.

Two groups of hypotheses were generated for this investigation. One group might be labelled "children's attitudes toward family", and the other called "family attitudes toward child". Among the first group of hypotheses are those which state that high-curiosity children have a higher level of involvement and identification with their homes and are more accepting of parental discipline than are low-curiosity children. It was hypothesized as far as family attitudes toward the child are concerned that the parents of high-curiosity children are more accepting, more willing to reward and encourage information-seeking behavior, and more democratic than parents of low-curiosity children.

Children's attitudes toward family. --A review of the literature indicates that children's attitudes toward their families are reflected in many ways. For example, Payne and Mussen (169) studied the nature of father-identification of junior- and senior-high school boys by using the California Psychological Inventory. They found a significant relationship between high father identification and perception of the father as a rewarding figure. Levin and Sears (118) found a relationship between the frequency of aggression of preschool children and the nature of their parental identification.

Olson (166) concluded, after studying third grade children, that community and family living had to be considered along with physical, mental, and emotional development in assessing differences among children. He pointed out that children's social relations in the classroom have "deep roots" in such living.

The child probably through imitation incorporates attitudes, ideas, habits, and values of the family into his action system. For example, Rose (187) found that high school boys who adopt their families as reference groups are more likely to plan to go to college than are those pupils who do not. Girls, on the other hand, did not follow the same pattern. Mosher and Scodel (156) found that the ethnic attitudes of children were related to the ethnic attitudes of their mothers. Katz (108) also found that social attitudes conformed closely with the attitudes of parents as perceived by the child.

The values that parents hold regarding achievement seem to be influential in determining the child's attitude toward achievement, independence, and self-reliance (188). The relationship, however, is transactional. For example, after accepting the parent's values pertaining to achievement, children tend to become less dependent on adults for help and emotional support (47). Such a finding indicates that after certain needs are satisfied the child is ready to become more self-actualized. Schaefer and Bayley (195) stated that human infants are not completely plastic but they have the innate tendencies to respond individualistically to parental behavior and attitudes.

The level of achieved self-actualization seems to be significant in the child's attitudes toward punishment. Morgan and Gaier (154) studied types of reaction of mothers and children and found that when an ego-threat is present, mothers and children tend to over-estimate the ego-defense reactions of the other, but not in the self. Mothers regard themselves as seeking an answer to the situation but children do not think that they are doing so.

Parental attitudes toward children. -- It would appear that at least in the early stages of development the child's attitude is primarily, but not always, a reciprocation of the attitudes of parents. Probably for this reason most studies begin, as do some of the studies mentioned above, by looking first at the attitudes of the parents.

Several studies and reports indicate that children manifest the kind of behavior to which they have been exposed. Bergman (11) wrote in the Nervous Child that children exhibiting neurotic anxieties lived in close contact with others who had neurotic fears, or they had had a sudden overwhelming traumatic experience, or they had suffered other psychic conflicts. To prevent such behavior, Bergman stated, the child must develop in a home where the atmosphere is warm and loving.

Moloney (151) considered such an atmosphere so important that he would have society transfer children from mothers incapable of love to surrogate mothers who can handle their needs. He said that society must give up its sanctimonius, "hallowed" attitude toward women who are mothers in name only.

Other writers have indicated the same relationship between children's behavior and the family environment in which they live. Beverly (19) followed several case studies of children who exhibited extreme anxiety. Nearly all of the children had been subjected to a rigid schedule during infancy. Cummings (50) after studying the frequency of emotional symptoms among school children concluded that over-protected children showed more "nervous" difficulties, while neglected children were more "difficult" in the sense of aggressive, cruel behavior and in the extent of their lying and stealing.

There seems to be a link between personality structure and the relationships between parents and children, although the exact nature of such relationships is not always clear. Kohn and Clausen (111) report that schizophrenic patients more frequently than normal persons had mothers who had strong authoritarian personalities and fathers who were weak. They hesitate, however, to ascribe a leading etiological role to these relationships.

This finding does indicate that pupils might be studied by analyzing their interpersonal relationships. Dettering (55) claimed that teachers should stop asking what the child is or what he is like but teachers should ask who are the others whose role he is taking and what kind of person is he trying to become.

Turning from the negative to the positive aspects of some child rearing relationships, it was discovered that certain types of early environments seemed to play rather definite roles in the development of curiosity or creativity. Goertzel and Goertzel (78) found very little mental illness in the homes of the "eminent" persons they studied. Landis (113) reported that children from democratic homes have advantages in personal and social adjustment factors over children from authoritarian families. Perhaps this comes about because the children feel they have greater freedom and independence which may result in less emotional involvement with their parents (124). Certainly, there seems to be present an element of respect for the child in which parents show appreciation for the child's individuality. This respect is shown by an endorsement of the child's strengths and limitations and by the granting of autonomy and privacy (46).

Mummery (157) reported that democracy, warmth, permissiveness and similar attitudes on the part of parents were productive of assertiveness which is socially acceptable. Such assertiveness lends itself to the development of curiosity. Josselyn (104) pointed out that children whose curiosity is accepted tend to do a great deal of exploring often with rather specific goals in mind. Vinacke (227:270) stated that exploration and manipulation depended not only upon what there is to explore but also upon the codes which govern the child's activities. Such codes are derived from parental attitudes and the familial environment in which the child is reared.

Summary

Although there are many reports of opinions and empirical investigations of curiosity, they are not reviewed in this chapter. Since they have been reported in other studies, this chapter is devoted to reviewing briefly a sample of studies pertaining to the personal and social variables under investigation. Such a review seemed essential in order to understand more clearly the nature of hypotheses developed for the present research.

The studies were reviewed under three major divisions; personal variables, social variables, and those pertaining to family interactions. In some cases, it was acknowledged that separation among these variables was almost arbitrary and depended upon degree of emphasis rather than real differences.

The personal variables examined in this investigation included studies of the self, anxiety and security, moral and ethical values, thought processes, interests and needs. In addition, literature pertaining to overall personal adjustment--maturity and emotional balance --was reviewed.

Writers concerned with the self gave many reasons for testing some of the variables selected in this investigation. Most prominent of these writers was Maslow whose self-actualizing theory of personality development seemed to parallel much of the thinking of the authors regarding the nature of the personality of highly curious individuals.

The review of studies of anxiety and security were not as helpful as those on the self. This was due to the imprecise definitions of anxiety which resulted in many writers using the term to refer to different types or levels of behavior. The results of the survey seemed to indicate that curiosity was probably related to anxiety in a curvilinear manner. A little anxiety is necessary if the child is to manifest curiosity. Too much anxiety is debilitating and destroys curiosity.

Such levels of anxiety seem to be significant in the thought processes and in the development of interests. The literature reviewed tended to support the idea that curiosity, thinking and the child's interests were related in some way to risk taking. This basic risk taking was tied to security and where the child was insecure, both his thought processes and his manifestation of curiosity were curtailed.

Tied closely with studies of the self were studies of moral and ethical values. The nature of curiosity of a child seems to be related in some way to his ideas of self and his superego. He has established most of these ideas through his identification with his parents. The review seemed to indicate that the child's moral and ethical attitudes functioned in a global manner in guiding and directing curiosity.

When reviewed in terms of overall adjustment, the findings tended to support the hypotheses that positive adjustment and high curiosity were generally related, that emotional balance and a high level of maturity were conducive to the manifestation of curiosity.

The social variables were grouped under three rubrics: social prejudice, social skills, and participation, and overall social adjustment. Reports on social prejudice indicated that this type of attitude delimits curiosity. This was thought to be due to the limitations prejudice places on experiences in social participation. Such participation involves the whole person in such a way that he is able to reach out beyond the self. This reaching out appears to be of paramount importance in curiosity. The review of the literature also indicated close relationships among friendliness, co-operation, social flexibility, and curiosity.

The survey of literature pertaining to overall social adjustment gave increasing credence to the hypotheses generated for this investigation. Such variables as responsibility, social maturity, freedom, and social flexibility seemed to be those which logically would be part of the behavioral pattern of high-curiosity children. Earlier studies by the authors tended to support this assumption.

Since the child is influenced to a large extent by the nature of his family, it was essential that literature pertaining to family interrelationships be reviewed. Studies pertaining to two aspects of these relationships were surveyed. First, literature pertaining to the child's attitude toward his family was surveyed. Secondly, those studies concerned with the attitude of the child's family toward the child were reviewed.

This review indicated that the child obtained many of his values from his family. This he does, in part, by identification with other family members. The values held by the child probably influence the extent to which he will manifest his curiosity.

The attitudes held by the parent regarding child rearing practices would seem to set the stage for child behavior. For this reason, the literature reviewed included studies of parental permissiveness, democratic attitudes, and recognition of children's needs and individuality.

CHAPTER III

MEASURING INSTRUMENTS AND PROCEDURES

In order to answer the questions raised in this investigation several kinds of measuring instruments were used. Some of them measured variables of personal and social adjustment of the children, others were utilized to evaluate the attitudes of parents, and another group of measuring tools was used to determine the curiosity level of the children.

Instruments Used to Measure Personal and Social Adjustment

A series of paper and pencil measuring scales and rating devices was selected to obtain evidence on variables of personal and social adjustment. If they were available, scales which had received thorough testing in research studies or in practical application were chosen. For some variables, no well-established measuring devices were available. In such cases a number of experimental instruments were assembled and inspected for face validity. Those that seemed promising were administered to a small group of children in a preliminary study to determine their suitability for use with the children of the present study. Scales which presented difficulties in administration, scoring, or interpretation were discarded. It was realized, of course that all psychological tests and scales, no matter how well established, are in a sense experimental and the results of any study employing them must be interpreted in the light of the measuring instruments.

Self-report instruments were used in this study because they are more manageable and much less time consuming than individual interviews and individual projective tests and because they have been shown to be satisfactorily dependable and valid when they are carefully constructed and administered. The success of self-report instruments with children has been attributed by Baker (9:479-81) to the fact that the problems of children are "so close to their lives that they can scarcely refrain from answering what applies to them". There is also research evidence that self-inventories are more effective than rating methods or interviews in some cases. Jackson (101), using one of the inventories used in the present investigation, the _California Test of Personality_, (222), found the inventory to be superior to three ratings and an interview in its contribution to a composite measure of personality adjustment of school children.

The California Test of Personality. -- In the present study a number of different inventories and ratings were used. Of the major inventories used, the _California Test of Personality_ is an example of those organized in terms of components based upon logical analysis, expert opinion, and statistical analysis, as opposed to those organized on the basis of factor classifications. It is one of the most thoroughly tested and convincingly validated tests of its type for children.

The *California Test of Personality* yields scores on 12 aspects of personal and social adjustment, as well as a personal adjustment score, a social adjustment score, and a total adjustment score. The 12 aspects, described in the words of the authors, are as follows:

> *Self Reliance*. An individual may be said to be self-reliant when his overt actions indicate that he can do things independently of others, depend upon himself in various situations, and direct his own activities. The self-reliant person is also characteristically stable emotionally, and responsible in his behavior.
>
> *Sense of Personal Worth*. An individual possesses a sense of being worthy when he feels he is well regarded by others, when he feels that others have faith in his future success, and when he believes that he has average or better than average ability. To feel worthy means to feel capable and reasonably attractive.
>
> *Sense of Personal Freedom*. An individual enjoys a sense of freedom when he is permitted to have a reasonable share in the determination of his conduct and in setting the general policies that shall govern his life. Desirable freedom includes permission to choose one's own friends and to have at least a little spending money.
>
> *Feeling of Belonging*. An individual feels that he belongs when he enjoys the love of his family, the well-wishes of good friends, and a cordial relationship with people in general. Such a person will as a rule get along well with his teachers or employers and usually feels proud of his school or place of business.
>
> *Withdrawing Tendencies*. The individual who is said to withdraw is the one who substitutes the joys of a fantasy world for actual successes in real life. Such a person is characteristically sensitive, lonely, and given to self-concern. Normal adjustment is characterized by reasonable freedom from these tendencies.
>
> *Nervous Symptoms*. The individual who is classified as having nervous symptoms is the one who suffers from one or more of a variety of physical symptoms such as loss of appetite, frequent eye strain, inability to sleep, or a tendency to be chronically tired. People of this kind may be exhibiting physical expressions of emotional conflicts.
>
> *Social Standards*. The individual who recognizes desirable social standards is the one who has come to understand the

> rights of others and who appreciates the necessity of subordinating certain desires to the needs of the group. Such an individual understands what is regarded as being right or wrong.
>
> Social Skills. An individual may be said to be socially skillful or effective when he shows a liking for people, when he inconveniences himself to be of assistance to them, and when he is diplomatic in his dealings with both friends and strangers. The socially skillful person subordinates his or her egoistic tendencies in favor of interest in the problems and activities of his associates.
>
> Anti-Social Tendencies. An individual would normally be regarded as anti-social when he is given to bullying, frequent quarreling, disobedience, and destructiveness to property. The anti-social person is the one who endeavors to get his satisfactions in ways that are damaging and unfair to others. Normal adjustment is characterized by reasonable freedom from these tendencies.
>
> Family Relations. The individual who exhibits desirable family relationships is the one who feels that he is loved and well-treated at home and who has a sense of security and self-respect in connection with the various members of his family. Superior family relations also include parental control that is neither too strict nor too lenient.
>
> School Relations. The student who is satisfactorily adjusted to his school is the one who feels that his teachers like him, who enjoys being with other students, and who finds the school work adapted to his level of interest and maturity. Good school relations involve the feeling on the part of the student that he counts for something in the life of the institution.
>
> Community Relations. The individual who may be said to be making good adjustments in his community is the one who mingles happily with his neighbors, who takes pride in community improvements, and who is tolerant in dealing with both strangers and foreigners. Satisfactory community relations include as well the disposition to be respectful of laws and of regulations pertaining to the general welfare.

The authors report that there is "a slight tendency, possibly significant in two or three of the components, for the females' responses to average slightly higher than those of the males".

The elementary form of the California Test of Personality includes an Interests and Activities section which was administered in this study. The section lists a wide variety of activities ranging from sedentary to active and from solitary to team. The pupil completing the inventory indicates which of the activities he likes, which he dislikes, and which he actually engages in. Thus, the section yields information regarding activities which he likes but does not engage in, activities which he does not like and does not engage in, and activities which he does not like but for some reason does engage in.

Scoring procedures followed the recommendations of the test manual in all cases.

The Behavior Preference Record. -- Another test published by the California Test Bureau, the Behavior Preference Record (231), was administered to the children participating in this study. The Behavior Preference Record yields scores in Cooperation, Friendliness, Integrity, Leadership, Responsibility, and Critical Thinking. The test consists of a number of paragraphs describing common childhood conflict situations, followed by a number of alternatives for the child to mark. In each case, the first set of alternatives consists of ways of reacting to the situation from among which the child must choose one as being what he would do in that particular situation. The second set of alternatives to be marked consists of reasons for behaving as he has chosen. The child must mark one or more. The author reports a sex difference for the test: "Girls tend to make median scores as much as twenty percent higher on characteristics than do boys".

The Children's Personality Questionnaire. -- Another major inventory used in the study was the Children's Personality Questionnaire (178) for children of eight to 12, in which the personality traits measured have been identified by factor analysis. The questionnaire yields scores on 14 dimensions or "factors" of personality. The dimensions are identified by letters of the alphabet and by technical names. The descriptions given by the authors of the test are as follows:

> Factor A Schizothymia, A-, Reserved; Cyclothymia, A+, Easy Going...
>
> The most consistent features of Cyclothymia are easy-goingness, accessible emotions, and interest in people... In questionnaire responses, the A+ child expresses marked preference for occupations dealing with people, enjoys social recognition, and is generally willing to "go along" with expediency; while the A- child is more uncompromising and earnest, prefers things or words to people, likes working alone, intellectual companionship, and introspection. There is evidence that collections of A+ persons more readily form active groups, and there is experimental proof that they are more generous in personal relationships, less disturbed by criticism, better able to remember names of people. The schizothymes (A-), on the other hand, are more penetrating in their evaluations of people and things, more dependable in precision work, more inventive, and more dependable in exactly meeting promises which they seldom make!)
>
> Factor B Low "g", B-; High Mental Capacity, B+
>
> Factor C Ego Weakness, C-, Emotionally Unstable; Ego Strength, C+, Emotionally Mature
>
> Ego Strength is commonly regarded as a factor expressing the degree of achievement of dynamic integration and emotional control, i.e., the success of emotional

learning...The C- child...tends to be easily annoyed by things and people, is more often dissatisfied with his family and his school, has difficulty in keeping quiet and restraining himself, and is discouraged by his inability to meet good standards of behavior. He shows more than average generalized neurotic responses in the form of digestive and sleep disturbances, irrational fears, obsessional behavior, and vague health failures.

Factor D Placidity of Temperament, D-, Phlegmatic; Excitability, D+ Excitable

This dimension...is distinguishable by the excitability's being of an immediate "temperamental" nature, by mind-wandering distractibility, by an attention-getting insecurity, and by an irrepressible, positive, assertive tone to the emotionality. The high D child reports that he is a restless sleeper, easily distracted from work by noise or intrinsic difficulty, is hurt and angry if not given important positions or whenever he is restrained or punished, and so on...the high D scoring child, though likeable and affectionate in quieter moods, is apt to be regarded as a considerable nuisance in restrictive situations.

Factor E Submissiveness, E-; Dominance, E+

In children, dominance tends to be associated with disobedience and rejection of authority - also with delinquency if there is instability at the same time.

Factor F Desurgency, F-, Serious; Surgency, F+, Happy-Go-Lucky

Examination of origins shows that surgent persons have generally had an easier, less punishing, more optimism-creating environment, or that they have a more happy-go-lucky attitude through less exacting aspirations. Desurgent individuals have generally been brought up with more severe, sobering standards...Desurgent children are rated also as secretive and day-dreaming, with a proneness to the particular nervous habit of nail biting; but surgent children are more accident-prone.

Factor G Super Ego Weakness, G-, Frivolous, Super Ego Strength, G+ Persevering

This factor...is indicative of controlled rather than emotional behavior, is characterized most by energy and persistence at its positive pole...this factor best depicts the regard for moral standards, the tendency to drive the

> ego and to restrain the id...Subjectively, the G+ person views himself as correct in, and a guardian of, manners and morals, persevering, planful, and preferring efficient people to other companions. A number of objective tests have already been found for this factor, and seem to indicate that it involves success in a variety of performances requiring persistence, freedom from oscillation, and good organization of thinking. In ratings of children, the negative or G- pole associates itself with lying, showing off, stealing, destruction of property, and lack of control of temper.

Factor H Threctia, H-, Shy; Parmia, H+, Venturesome

> The H- child shows the withdrawn, careful, "well-behaved" syndrome which sometimes precedes psychological difficulties. The H-individual reports himself as disliking occupations with personal contacts, preferring one or two close friends to crowds, avoiding large parties or open competition, fearful of new situations, somewhat spiteful and distrustful, but very considerate of others' sensitivities, and not feeling able to keep in contact with all that is going on around him...The evidence is that H- is: (a) substantially a constitutional factor, (b) connected with threat-reactivity of the autonomic nervous system. In group situations, H+ persons feel free to participate, but are privately voted long-winded, insensitive speakers, and tend to make more social than task-oriented remarks.

Factor I Harria, I-, Tough Minded; Premsia, I+, Tender Minded

> Studies of this factor at various ages have shown associations of Premsia (I+) with fastidious aversion for rough people and rough games, an interest in art, travel, and new experiences, an anxious imaginativeness, a love of dramatics and literature...Girls score at a significantly higher level than boys...The nature-nurture evidence shows that it is not hereditary, but almost wholly environmental and cultural in origin. Thus, I+, is associated with overprotected...homes...I+ children report that they avoid rough and adventurous situations, like to depend on the teacher, are artistic and neat; but they nevertheless are rated anti-social. They are rated as fastidious, interested in school, but tale-telling and demanding of attention, cautious, claiming to feel tired easily, complaining of nightmares, headaches, and stomach upsets, and given to absconding from games and physical exercise.

Factor J Zeppia, J-, Vigorous; Coasthenia, J+, Internally Restrained

> This has so far proved a difficult pattern to interpret...

In questionnaire responses, the J+ Child prefers to do things on his own, is physically fastidious and intellectually individualistic, thinks over his mistakes and how to avoid them, tends to forget if he is unfairly treated, has strong private views differing from the group, but prefers to keep in the background and avoid argument, knows he has fewer friends...The coasthenic individual, if possessed also of good intelligence, may, despite his lack of assertiveness and gregariousness, achieve well in intellectual work.

Factor N Naivete, N-, Simple; Shrewdness, N+, Shrewd

The essence of the Naivete - Shrewdness dimension is reasonably clear, though its cause is not yet to be assigned with certainty. The N+ person is a clear thinker with a trained, realistic, but sometimes expedient approach to problems; the N- person is a vague, sentimental, incontinent person, who may get along well with people in a primitive, heart-to-heart understanding, but has little self-discipline in anticipating the usual reactions of others, and is apt to be slow and awkward.

Factor O Unperturbed Adequacy, O-, Complacent; Guilt Proneness, O+, Self Reproaching

As the items show, the O+ person feels overfatigued by exciting situations, feels inadequate to meet the rough daily demands of life, is unable to sleep through worrying, is easily downhearted, and, especially, remorseful. In children, definite fears, as well as a central feeling of inadequacy and loneliness are prominent for O+ scores.

Factor Q_3 Weak Self-Sentiment, Q_3-, Lax; Strong Self-Sentiment, Q_3+, Self Controlled

The positively loaded response items show the child high in Q_3 as self-controlled, striving to accept approved ethical standards, ambitious to do well, considerate of others, foresighted, disposed to reduce and control expressions of emotion, and conscientious. Factor Q_3 correlates substantially with the self-sentiment, i.e., the integration of drives in the sentiment directed to maintaining an adequate self-concept. Its negative pole, Q_3-, is essentially an uncontrolled emotionality, excitability, and a rejection of cultural demands...Anxiety research shows that Q_3- is a leading influence in the second-order anxiety factor.

Factor Q_4 Low Ergic Tension, Q_4-, Composed, Relaxed; High Ergic Tension, Q_4+, Driven Tense

Children and adults scoring high describe themselves as

> irrationally worried, tense, "driven", irritable, and in turmoil. They feel frustrated, and are aware of being criticized by parents for untidiness, phantasy, and neglect of good goals. Both actual correlations and resemblances in content confirm some association between Q_4 (Tension) and low Self-Sentiment (Q_3), Ego Weakness (C-), Guilt Proneness (O+), and Excitability (D). This association would be expected from the known grouping together of these factors (in adults) in the second-order anxiety factor

The authors report that significant differences exist between boys and girls on six of the factors. Boys of this age score significantly higher on Excitability (D), Surgency (F), Shrewdness (N), and Ergic Tension (Q_4), while girls score higher on Tender Mindedness (I) and Self Control (Q_3). On the other eight personality dimensions of the questionnaire, boys and girls do not differ significantly.

Cassel Group Level of Aspiration Test. -- The *Cassel Group Level of Aspiration Test* (35) was employed even though its validity as a test of level of aspiration is questionable. Since no satisfactory group test of level of aspiration exists, it was our intention to see if the Cassel test would yield results comparable to those of certain factors of the *Children's Personality Questionnaire* which contain aspects of ambition, aspiration, and goal directedness.

The *Cassel Group Level of Aspiration Test* requires eight repetitions of the simple motor task of drawing squares around small circles as rapidly as possible. Before each trial, the examinee makes an estimate of the number of squares he will be able to complete in thirty seconds. At the end of each trial, he counts the number of squares completed and makes an estimate for the next trial. After each trial, he computes his own score which can never exceed his estimate (even if his performance exceeds his estimate) and which is reduced by two points for every point by which his estimate exceeds his performance. His score for the test is the average of his trial scores. A level of aspiration quotient is obtained by dividing the standard score obtained on the trials by the standard score of the examinee's intelligence quotient.

Social Distance. -- A social distance scale was adapted from the instrument developed by Bogardus (23) for recording social distance. The scale was called "Other People Test" and included varying nationalities, religious groups, political groups, and employment groups. The names of the various groups were listed and the children were asked to check whether they would accept the members of each group as guests in their homes, as friends in school, as committee members, as schoolmates, or whether they would speak to them, allow them to visit the United States, or bar them from the United States. Scores were obtained by assigning decreasing numbers of points from highest to lowest acceptance, with accepting the people as guests at home receiving the highest number of points.

Social Attitudes. -- The Social Attitudes Scale was developed by Harris (85) to provide a measure of social responsibility in children. The scale consists of fifty items such as the following:

> It is no use worrying about current events or foreign affairs; I cannot do anything about them anyway.

> At school, it is easy to find things to do when the teacher doesn't give us enough work.

The examinee is required to respond to each item by "agree" or "disagree". The scale items were chosen according to their ability to discriminate between two groups of children of greater and lesser responsibility selected on the basis of the nominations of their classmates. Retest reliabilities ranging from .60 to .70 for various groups of children are reported. The author also reports that girls' scores tend to exceed boys' scores on the scale. He says, "In the sense of this test, girls are perhaps better socialized than boys."

A Guess-Who device also developed by Harris (85) was used in the present study. The children were asked to list the names of three boys and three girls in their classes who were "best fits" for each of four aspects of responsibility: reliability, accountability, loyalty, and doing an effective job. Four untitled descriptions were given to the children:

1. This is a person upon whom you can always count; you can depend on him. When he promises that he will do something, you can always count on his doing it. You can count on his word and trust him.

2. This person is a square shooter. He doesn't try to take advantage of or cheat others. When he has done something wrong, he will own up to it rather than try to blame someone else.

3. This person thinks for the good of others rather than always for his own gain. He is loyal to the group.

4. This person is one who gets things done. On a class project, on a committee, or on a work job he gets right to work and can be counted upon to do well and promptly.

Below each paragraph, space was provided for the listing of three boys' names and three girls' names. Scores were obtained by totaling the number of times a person's name was listed.

Institute of Child Study Security Test. -- The Institute of Child Study Security Test (81), "The Story of Jimmy", was developed by Grapko at the University of Toronto's Institute of Child Study. The author reports that the test has yielded retest reliability coefficients ranging from .76 to .95 for various groups of children. Face validity for the test is reported very high and construct validity is reported to be most acceptable for grades four and five. The test consists of a series of paragraphs describing a day in the life of a school-age boy, Jimmy. Following each paragraph are five options of ways that Jimmy might react to the situation described in the paragraph. The options are designed to reveal independent security, mature dependent security, immature dependent security, deputy agent, and insecurity. The terms are summarized by the author as follows:

> Security is a dynamic concept implying change, growth, and integration. The ability to complete an activity and the willingness to accept one's own decisions, actions, and consequences in the performance of the activity, is called Independent Security. Thus, the child who climbs on his bicycle and succeeds in maneuvering the bicycle ahead is independently secure in this activity. The child remains independently secure as long as his performance level meets his desired level of achievement.
>
> The willingness to share in the performance of an activity combined with a willingness to mutually accept the consequences of decisions and actions is called Mature Dependent Security. The child who chooses to make a snow man with another child (or group of children) must be willing to share in accepting whatever success or failure results from their efforts.
>
> To wait for or expect help in completing a task or performing an activity is defined as Immature Dependent Security. The

child who waits to be told what to do with his play materials, or who expects the adult to make the kite for him is immaturely dependently secure. This form of security hinges on the willingness of the adult to assume the role of dependent agent, and also on the child's faith, trust, and confidence in the efficacy of the agent.

The avoidance of consequences by means of some psychological shuffle is called a Deputy Agent. This shuffle may be to try to place the blame on someone else for one's own inadequacy, to postpone facing the consequences, to introduce an excuse, adopt a sour grapes attitude, and the like. The child who rationalizes his poor performance at reading by indicting the teacher for her inadequacy, succeeds in escaping from personal fault by means of a deputy agent.

To lack skill in dealing with an activity or significant "event" which gives rise to indecision, hesitation, and anxiety is called Insecurity. The child who cannot do his arithmetic problems and broods over his inability is insecure. To wait in despair without any plan of action is a manifestation of insecurity.

Each of the options following each paragraph is designed to represent one or other of the five security categories described above. The child taking the test is asked to rank the options one to five according to the preference "Jimmy" will show in reacting to the situation.

Two scores are obtained from the test. In the words of the author, the security score "...measures the degree to which the child's rank order of items agrees with the 'ideal' order of rank... The consistency score measures the degree of concordance or uniformity the child shows in giving the same rank to the fifteen statements or items for each of the security categories." (81:5)

The author reports significant differences between boys' and girls' scores on both security and consistency. He believes that this indicates either that girls develop more quickly than boys in these traits or that they are in general more secure than boys.

Descriptive Words (Morality). -- The Descriptive Words test was designed by Getzels and Jackson (76:246-47) as a test of morality. It consists of twenty sets of three adjectives, each describing one of three personal qualities: a "moral" quality, a "physical" quality, or a "social" quality. The child taking the test is asked to mark for each set the quality that he would most like to have with an "M" and the quality that he would least like to have with an "L". All qualities listed are usually considered desirable. There are separate forms for boys and girls. Where the set for boys lists: honest, strong, popular; the set for girls lists: honest, cute, popular. For each set of adjectives a score of 2, 1, or 0 is possible, depending upon whether the "moral" adjective is placed first, second, or last. A child's total score is the sum of the points he obtains on the twenty sets.

Word Association Test (Creativity). -- The Word Association Test was designed by Getzels and Jackson (76:224-25) as a measure of creativity. The test consists of a listing of twenty-five words, each of which has more than one meaning. The examinee is asked to write as many meanings as he can think of for each word. The test appears to require flexibility of the examinee in shifting rapidly from one frame of reference to another. The score on the test is the total number of different meanings given. The authors report an internal consistency reliability coefficient of .87 for the test.

Uses for Things (Creativity). -- Uses for Things is a test of creativity adapted by Getzels and Jackson (76:226) from tests used by J. P. Guilford (83) in his factor analytic study of creative thinking. The test lists the names of five objects (bricks, pencils, paper clips, toothpicks, sheet of paper) with two uses to which each object could be put, one usual and the other unusual. In the example, the uses given for toothpicks are "clean teeth" and "make a necklace". The children are asked to write as many uses as they can for each object, writing down anything that comes to mind, no matter how strange. Two scores are derived from the test: one is the number of different uses listed for each object summed over all objects; the other is the number of uncommon uses given for each object summed over all objects. A reliability coefficient of .86 is reported by the authors.

Children's Manifest Anxiety Scale. -- The Children's Manifest Anxiety Scale (36) was adapted by Castaneda, McCandless, and Palermo from Taylor's scale of manifest anxiety (219) which, in turn, had been developed from items of the Minnesota Multiphasic Personality Inventory. The Children's Manifest Anxiety Scale is made up of 53 items to which the child must answer "yes" or "no"; 42 of the items make up the anxiety scale; the remaining 11 compose the "lie" scale which is intended to be a measure of defensiveness or the child's tendency to falsify his responses. The anxiety scale is composed of items such as the following:

It is hard for me to keep my mind on anything.

I get nervous when someone watches me work.

The lie scale is made up of statements which are phrased in such a way as to be true of no one:

I am always kind.

I never say things I shouldn't.

It appears that only someone who has a great need to present himself in a favorable light would answer "yes" to these statements. The child's score on the lie scale is used to estimate how defensive he may be in answering the questions of the anxiety scale. The assumption is that there is a generalized trait of defensiveness which is measured by the kinds of items included in the lie test. Test-retest reliability coefficients for the anxiety scale of .91 and .94 are reported for fifth-grade boys and girls, respectively.

General Anxiety Scale for Children. -- The General Anxiety Scale for Children (193:309-10) was developed by Sarason and others at Yale University. It consists of a 34-item anxiety scale and an 11-item lie scale. The child is asked to respond "yes" or "no" to a series of questions about what he thinks and feels.

The following items are from the anxiety scale:

When you are away from home, do you worry about what might be happening at home?

When you are in bed at night trying to go to sleep, do you often find that you are worrying about something?

The items of the lie scale were selected to be measures of defensiveness toward anxiety. Each question includes the word "ever" which makes the truthful response of "no" to any of them very unlikely.

The following are examples of "lie" items:

> Have you ever been afraid of getting hurt?
>
> When you were younger, were you ever scared of anything?

The authors of the test found significant negative correlations between the anxiety scale and the lie scale. They also found that on the average girls scored higher than boys on the anxiety scale while boys scored higher on the lie scale. Test-retest reliability coefficients were reported to average .73.

Social Prejudice. -- A personality inventory, the Children's Anti-Democratic Attitude Scale, which we called the Agree-Disagree Test was used in the study because it had been shown by its authors (80) to be related to measures of both specific and generalized tolerance and intolerance. The inventory is composed of 24 items which the authors had selected because they "...seemed to embody various factors reported in the literature as related to prejudicial attitudes toward various minority groups" (80:86). The children are asked to tell whether they agree or disagree with each of the items of the inventory. A high number of agreements seems to indicate constriction, cynicism, fearfulness, and insecurity. A sample of the items follows:

> It is all right to get around the law if you don't actually break it.
>
> I refuse to play some games if I am not good at them.
>
> If a person doesn't like the way our country does things, he should just keep his mouth shut.

This inventory was used by Muuss (161) under the name Children's Antidemocratic Attitude Scale.

Intolerance of Ambiguity. -- Muuss (161) combined 12 items which he reports to have been known to him to be reliable into an Intolerance of Ambiguity Scale. The scale consists of 12 items such as the following:

> People who seem unsure and uncertain about things make me feel uncomfortable.
>
> Nobody can feel love and hate towards the same person.

The number of agreements is the score on intolerance of ambiguity.

Conceptual Systems. -- The Situational Interpretation Experiment is a research instrument "for measuring personality variation on the concrete-abstract dimension" as originally described in Harvey, Hunt, and Schroeder, *Conceptual Systems and Personality Organization* (100). The Situational Interpretation Experiment as used in the present study is a group administered paper-and-pencil test. In taking the test, a child first completes a name sheet by writing the names of persons who meet specific descriptions. After "Person 1" and "Person 2" on the name sheet the child writes the names of friends of about his own age whom he likes and likes to do things with; after "Person 3" and "Person 4" he writes names of children he does not particularly like, with whom he does not feel comfortable. The child is then confronted with a hypothetical situation in which he receives criticism from each of the persons listed on his name sheet and is asked how he would interpret the criticism and what he would do about it.

The responses are scored as giving evidence of functioning in one of four systems varying along the concrete-abstract dimension, with system four being most abstract. Judgments are made in accordance with detailed instructions contained in the manual (100:2-11). A System I response may reflect acceptance of structural prerogatives in that the one making the criticism may be said to either "have a right" or "have no right" to his opinion and/or in that it may involve concern with a specific erroneous judgment such as "I'm wrong" or "he's wrong", which can be readily disposed of, thus restoring previous positions on an external standard. A System II response indicates concern with interference or control and/or concern with malevolence and distrust, both of which may result in retaliation. A System III response may indicate denial of the criticism: "He wouldn't say that"; "He's kidding, joking"; He's in a bad mood"; or it may indicate that the subject sees the criticism as an attempt to affect his feelings either positively or negatively, or again it may indicate that the subject sees the criticism as reflecting some aspect of the affective relationship ("He's jealous."), or as a disruption in the relationship ("He doesn't like me.") A System IV response reflects concern with information potential ("He may have some ideas which should not be overlooked.") or concern with differing standards ("All people don't do things exactly alike.") In contrast to those of preceding systems, a System IV response may indicate that conflict may be tolerated - no action need be taken to reestablish relationships.*

---

*Lillian Lamb generously undertook and completed the difficult task of scoring the Situational Interpretation Instrument.

Instruments Used to Measure Parental Attitude

The Parental Attitude Research Instrument. -- The hypothesis that parental behavior and attitudes are related to child behavior and attitudes led to an attempt to obtain measures of parental attitudes. The Parental Attitude Research Instrument (PARI) was sent to the mothers and fathers of selected groups of high- and low-curiosity children (201). The scale sent to the mothers is the now-familiar one which has been used extensively in research studies. The scale sent to fathers is an experimental form which parallels the scale for mothers in so far as that is possible. The scale for mothers consists of 115 statements and the scale for fathers consists of 240 statements which the parent is asked to rate according to the degree of agreement or disagreement felt for each. The first three statements of each scale are as follows:

Scale for Mothers:

1. Children should be allowed to disagree with their parents if they feel their own ideas are better.
2. A good mother should shelter her child from life's little difficulties.
3. The home is the only thing that matters to a good mother.

Scale for Fathers:

1. Children should feel absolutely free to gripe about rules which their parents make.
2. A father should do his best to avoid any disappointment for his child.
3. The home is the only thing that matters to a good father.

Both scales consist of a number of sub-scales with a majority of the sub-scales in each major scale having a parallel sub-scale in the other. The titles of the sub-scales are as follows:

Sub-scales in the scale for fathers

Encouraging verbalization
Fostering dependency
Seclusiveness
Breaking the will
Harsh punishment
Deception
Marital conflict
Equalitarianism
Non-punishment
Demanding activity
Expressing affection
Irresponsibility of father
Suppression of aggression
Deification of parent
Excluding outside influences
Irritability
Strictness
Suppression of sexuality
Ascendency of husband
Comradeship
Inconsideration of wife
Avoid expression of affection
Avoid communication
Autonomy of child
Achievement demand
Complaint of ascendency of wife
Suppression of affection
Change orientation
Forcing independence
Past orientation

Sub-scales in the scale for mothers

Encouraging verbalization
Fostering dependency
Seclusion of mother
Breaking of will
Martyrdom
Fear of harming the baby
Marital conflict
Strictness
Irritability
Excluding outside influences
Deification of parents
Suppression of aggression
Rejection of homemaking
Equalitarianism
Approval of activity
Avoidance of communication
Inconsiderateness of the husband
Suppression of sexuality

Ascendency of the mother
Intrusiveness
Comradeship and sharing
Acceleration of development
Dependency of the mother

The authors of the Parental Attitudes Research Instruments report reliability estimates for most of the sub-scales to be adequate for group comparisons.

Measures and Procedures Used in Establishing Criterion Groups

In order to determine the personal and social variables differentiating children high in curiosity from children low in curiosity, it was necessary to establish criterion groups. In addition, the analysis of the data indicated that there were sufficient differences between boys and girls on many of the variables to warrant the use of separate groups by sex in further analysis. The procedures for determining four criterion groups - high boys, low boys, high girls and low girls are also described in this section of this chapter.

Instruments had been developed to obtain teacher judgment, peer judgment, and self judgment of curiosity. They are discussed in detail in an earlier publication (138). They are described very briefly below.

Teacher judgment of curiosity. -- The teachers of the various classes participating in the study were asked to rank their pupils as to the relative amount of curiosity shown by their behavior. They ranked the child who showed the most curiosity "first" and the child who showed the least curiosity "last". They continued ranking in this manner until all children were ranked. The ranks were transformed to McCall T scores. The technique had been used by the authors in a previous study in which the retest reliability for the rankings had been found to center around .77. (138:33).

Peer judgment of curiosity. -- The children in each classroom were asked to write the names of classmates whose behavior most nearly resembled that of the persons described in eight paragraphs. Four of the paragraphs described the behavior of persons who would be thought of as above average in curiosity; four of persons below average. A child's score was a weighted sum of the times his name was listed. These scores were also transformed to McCall T scores. In a previous investigation, peer and teacher judgments had been found to be positively correlated, $r = .54$ (138:36).

Self-rating scale of curiosity. -- The child's estimate of his own curiosity was obtained by administering a self-rating scale entitled "About Myself". The scale had been developed and used by the present investigators in a previous study of the curiosity of school children. At that time an odd-even reliability estimate of .91 had been obtained. The correlations between self-rating and peer judgment and self-rating and teacher judgment were positive but low, .15 in the former case, .11 in the latter (138:36). Therefore, only peer judgment and teacher judgment were used in ascertaining the nature of the criterion groups.

Establishing curiosity groups. -- In the course of the investigation, it became evident that the differences between means for boys and girls on curiosity ratings were great enough to call for a separate analysis for each sex. At the same time, it was also found necessary to control for IQ since there was a low positive correlation (r = .36) between curiosity ratings and Lorge-Thorndike IQ. Therefore, in order to select high- and low-curiosity groups, children were chosen whose scores deviated from regression lines of curiosity on IQ by stipulated amounts. The procedure is described in an earlier publication (140) and is outlined here in an abridged form.

Since two estimates of curiosity were used (one made by teachers and the other by classmates) two regression equations were written for each sex, and separate curiosity groups of boys and girls were obtained. First, children whose curiosity scores deviated by at least one standard error of estimate from both regression lines were chosen. These children made up the high- and low-curiosity groups that are referred to in the report as the extreme groups because they include only those children whose curiosity scores were far higher or far lower on both teacher and peer estimates than would have been expected on the basis of their IQ's. Next, children whose curiosity scores deviated by one-half standard error or more from both regression lines were added to the appropriate high- or low-curiosity group. These groups are referred to as the consistent curiosity groups since all children included had curiosity scores deviating approximately equally from both regression lines, and since they include some children whose scores did not deviate as far as did those of the extreme group. Finally, children whose scores deviated in the same direction from both of the regression lines with one of the deviations being at least one standard error were added to make up the total high- and low-curiosity groups.

It can be seen that the extreme, consistent, and total curiosity groups are not independent since some of the same children are included in all three groups. The consistent group includes all children whose scores deviate by one half standard error or more from both regression lines, thus including the children in the extreme group. The make-up of the consistent group differs from that of the total group in that the latter includes some children whose two curiosity estimates were not so closely in agreement as were those of the consistent group. Thus scores on each variable were analyzed for three overlapping groups. The probability of obtaining one t significant at or below the .05 level in the tests of the significance of difference between means of any one variable (the probability of a Type I error) was increased by some amount but did not exceed .15. The probability of obtaining two or three such t's was, of course, less than .023 for the tests for any one variable. All three analyses are included in the report and t's which independently would be significant at or below the .05 level are marked with an asterisk. In the summary of findings, however, only the differences which were found to be significant for extreme groups are reported as significant. The two additional analyses are included because of the extra information they provide.

The high- and low-curiosity groups of boys and girls were found not to be dissimilar in average IQ when the differences between means were tested for significance by the t test. Table 1 shows the number of boys and girls in the various groups and the means, variances, F and t associated with each pair of groups. In all tables, the extreme curiosity groups are indicated by Roman numeral I, the consistent curiosity groups by Roman numeral II, and the total groups by Roman numeral III.

Scores on the self-rating scale for curiosity were examined to see whether children who were placed in the high-curiosity groups by the procedures described above were also high in curiosity according to their own ratings. Table 2 shows that the differences between means obtained from the self-rating scale for high- and low-curiosity groups were all in the expected direction and all significant by the one-tailed t test. It is interesting to note that the means of the groups of high-curiosity girls are near the means of the groups of low-curiosity boys. This again indicates the need to consider the sexes separately in the analysis.

Summary

It was the purpose of this chapter to describe the instruments and procedures used in the study. These included measures of personal and social adjustment, measures of parental attitudes, and instruments and procedures used to determine criterion groups.

In all cases, paper-and-pencil scales and rating devices were used. They are more manageable and less time consuming than individual interviews and individual projective techniques and seem to be almost as effective for some variables.

TABLE 1

MEAN, VARIANCE, AND RESULTS OF TESTS OF SIGNIFICANCE BETWEEN MEANS AND VARIANCES OF LORGE - THORNDIKE INTELLIGENCE QUOTIENTS FOR HIGH AND LOW CURIOSITY GROUPS OF BOYS AND GIRLS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
			Lorge - Thorndike Intelligence Quotients (Girls)					
I	16	119.50	252.40	12	110.16	237.60	1.06	1.56
II	37	116.35	257.90	30	114.93	305.02	1.18	.34
III	50	109.54	386.53	41	107.17	271.49	1.42	.62
			Lorge - Thorndike Intelligence Quotients (Boyd)					
I	15	116.20	283.17	14	108.78	255.10	1.11	1.21
II	50	110.42	252.98	40	111.87	295.54	1.16	-.41
III	60	109.00	235.76	49	110.53	279.29	1.18	-.49

TABLE 2

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS AND VARIANCES OF HIGH AND LOW CURIOSITY GROUPS OF BOYS AND GIRLS ON A SELF-RATING SCALE OF CURIOSITY

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
			Self Rating on Curiosity (Girls)					
I	16	52.62	131.45	12	44.91	87.17	1.50	1.95*
II	37	49.89	109.65	30	45.50	75.29	1.45	1.87*
III	50	50.68	107.69	41	44.82	92.14	1.16	2.78*
			Self Rating on Curiosity (Boys)					
I	15	59.46	55.69	14	49.78	165.10	2.96	2.45*
II	50	56.78	70.17	40	50.27	138.81	1.97	2.94*
III	60	56.35	74.80	49	49.08	134.24	1.79	3.64*

* Significant at or beyond the .05 level by one-tailed test.

Since a division between personal and social variables is difficult to make and since some of the instruments administered give information for both types of variables, the instruments are described only once. In the next chapter, results which may be considered more concerned with personal variables than with social variables are discussed separately.

Among the instruments from which several scores were obtained were the *California Test of Personality*, *The Behavior Preference Record*, *The Children's Personality Questionnaire*, and the *Institute of Child Study Security Test*. Tests used to measure a single variable included the *Cassel Group Level of Aspiration Test*, a social distance scale, a social attitudes scale, a descriptive word test to measure morality, a Word Association Test and a Uses of Things Test to measure creativity, the *Children's Manifest Anxiety Scale*, the *General Anxiety Scale for Children*, the Children's Anti-Democratic Attitude Scale, an intolerance of ambiguity test, and a test to measure conceptual systems.

In order to obtain information on parental attitudes, mothers and fathers of selected children were sent copies of the PARI. These instruments reveal the attitudes of fathers in thirty areas and the attitudes of mothers in twenty-three.

Before any of these measuring devices could be administered, it was necessary to obtain groups of children who differed in their levels of curiosity. Judgments of teachers and peers were used to ascertain these differences. Since both sex and intelligence were shown to be significant variables, both were taken into consideration in the determination of the criterion groups which included three each of high-curiosity boys, high-curiosity girls, low-curiosity boys, and low-curiosity girls. The results, which are reported in the next chapter, are based on the tests administered to these groups.

CHAPTER IV

ANALYSIS OF RESULTS

When criterion groups had been established attention was turned to the data to find answers to the three major questions of the study. These questions dealt with the differences between high- and low-curiosity children in personal and social adjustment and with differences between parents of these children in child-rearing attitudes.

Personal Variables

Although it is not possible to draw a sharp line between personal and social variables, for convenience those which are concerned with self, anxiety, thought processes, and values are considered as personal variables and those concerned with social prejudice and social participation, as social variables. It is similarly difficult to separate variables within these larger categories, so that sometimes it is chance which, for example, determines whether a finding is discussed under the heading of anxiety or under the heading of self.

The self. -- Four of the component scores of the personal adjustment section of the *California Test of Personality* measure aspects of self-acceptance and self-sufficiency. These are Self Reliance, Sense of Personal Worth, Sense of Personal Freedom, and Feeling of Belonging. According to hypotheses stated in Chapter I, high-curiosity children are expected to score higher than low-curiosity children in these variables. This was found to be the case without exception for high- and low-curiosity groups of boys. As Table 3 shows, all differences were in favor of the high-curiosity boys and most of them were significant. On Sense of Personal Worth all differences were significant; on Sense of Personal Freedom the differences were significant in both extreme and consistent curiosity groups; on Feeling of Belonging all differences were significant. These findings support the hypotheses that high-curiosity boys are more self-sufficient and self-accepting than are low-curiosity boys. Or, to use the term of the California Test of Personality, they are higher in "personal security".

Two of the dimensions, or "factors", of the Children's Personality Questionnaire seem to be related to self-acceptance and self-sufficiency. They are Q_3, Strong Self-Sentiment and Q_4, High Ergic Tension. Children scoring high on Q_3 are self-controlled, considerate, conscientious and seem to have adequate self-concepts. Children scoring high on Q_4 are tense, excitable and see themselves as being criticized by others. The results of the analyses of boys' and girls' scores are shown in Tables 3 and 4, respectively. Again in the boys' groups all differences between means are in the hypothesized direction, with two of them being significant, while differences between means of high- and low-curiosity girls are small and insignificant.

TABLE 3

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF SCORES OF HIGH- AND LOW-CURIOSITY BOYS ON VARIABLES RELATED TO SELF-ACCEPTANCE AND SELF-SUFFICIENCY

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
				Self Reliance				
I	15	7.80	2.74	14	6.42	5.80	2.11	1.77*
II	50	7.58	2.90	40	7.02	3.40	1.17	1.46
III	60	7.56	3.09	49	7.04	3.41	1.10	1.50
				Sense of Personal Worth				
I	15	9.06	3.63	14	6.57	9.18	2.52	2.63*
II	50	8.36	5.25	40	6.95	8.76	1.66	2.47*
III	60	8.35	5.21	49	7.08	8.21	1.57	2.51*
				Sense of Personal Freedom				
I	15	9.06	4.92	14	6.42	10.26	2.08	2.56*
II	50	9.30	3.11	40	8.00	10.61	3.41	2.27*
III	60	9.05	3.87	49	8.42	9.75	2.51	1.21
				Feeling of Belonging				
I	15	9.40	5.54	14	7.64	8.55	1.54	1.77*
II	50	9.58	4.86	40	8.35	9.51	1.95	2.12*
III	60	9.53	4.55	49	8.59	8.32	1.82	1.89*
				Q_3, Strong Self Sentiment				
I	15	3.13	1.55	14	2.28	.98	1.56	2.03*
II	50	3.04	1.42	40	2.85	1.31	1.08	.76
III	60	3.13	1.47	49	2.81	1.31	1.11	1.39
				Q_4, High Ergic Tension				
I	15	1.80	1.17	14	2.42	2.10	1.80	-1.31
II	50	2.02	1.48	40	2.50	1.84	1.23	-1.74*
III	60	2.08	1.36	49	2.40	1.66	1.21	-1.36

* Significant at or below the .05 level, one-tailed test

TABLE 4

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF SCORES OF HIGH- AND LOW-CURIOSITY GIRLS ON VARIABLES RELATED TO SELF-ACCEPTANCE AND SELF-SUFFICIENCY

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Self Reliance								
I	16	7.68	4.09	12	6.50	2.63	1.55	1.72*
II	37	7.94	3.49	30	7.40	3.07	1.13	1.22
III	50	7.82	3.13	41	7.82	3.49	1.11	.00
Sense of Personal Worth								
I	16	9.75	3.53	12	8.58	5.35	1.51	1.42
II	37	9.43	4.91	30	8.50	5.70	1.16	1.65*
III	50	9.20	5.67	41	8.73	5.10	1.11	.96
Sense of Personal Freedom								
I	16	8.87	4.65	12	9.08	2.99	1.55	-.28
II	37	9.35	4.51	30	9.20	3.20	1.41	.31
III	50	9.46	4.25	41	9.51	3.10	1.36	-.13
Feeling of Belonging								
I	16	10.37	2.78	12	9.91	5.53	1.98	.57
II	37	10.02	3.80	30	10.06	2.96	1.28	-.08
III	50	10.08	3.95	41	10.07	2.86	1.37	.01
Q_3, Strong Self Sentiment								
I	16	3.37	1.58	12	3.00	1.27	1.24	.82
II	37	3.51	1.20	30	3.10	1.33	1.11	1.49
III	50	3.48	1.35	41	3.21	1.27	1.06	1.07
Q_4, High Ergic Tension								
I	16	2.18	2.02	12	1.58	.44	4.53	1.49
II	37	1.86	1.39	30	1.93	1.37	1.01	-.23
III	50	1.94	1.44	41	1.73	1.45	1.00	.82

* Significant at or below the .05 level, one-tailed test.

Considering all of the analyses of this section the hypothesis of greater self-acceptance and self-sufficiency for high-curiosity boys is well supported; the same hypothesis for high-curiosity girls is left in doubt.

A comparison of means of high- and low-curiosity boys and girls on the tests dealing with self, shows the low-curiosity boys to have the lowest means of the four groups. The differences between means of scores of high-curiosity girls and low-curiosity boys are with only two exceptions significant for all curiosity groups. Even more remarkable, the differences between means of low-curiosity girls and low-curiosity boys are in favor of the girls and, in most cases, significantly so. The t's derived from the tests of significance of difference between means of low-curiosity boys *vs*. low- and high-curiosity girls, respectively, are shown in Table 5. The evidence from the analysis of tests dealing with "self" shows the low-curiosity boys to have the lowest "personal security", the least highly developed "self-sentiment", of all groups considered.

Anxiety. -- It was hypothesized that high-curiosity children are more free from hindering anxieties than are low-curiosity children. A number of tests purported to measure anxiety or variables closely related to anxiety were analyzed for differences between means of high- and low-curiosity groups. The results of the analyses can be seen in Tables 6 and 7. On one of the components of the *California Test of Personality*, which measures freedom from nervous symptoms, high-curiosity boys were found to be more free of nervous symptoms than low-curiosity boys. The difference was significant between the extreme high- and

TABLE 5

t'S FROM TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF LOW-CURIOSITY BOYS AND LOW- AND HIGH-CURIOSITY GIRLS, RESPECTIVELY, ON TESTS RELATED TO PERSONAL SECURITY

	Low-Curiosity Boys vs. Low-Curiosity Girls	Low-Curiosity Boys vs. High-Curiosity Girls
Self Reliance (California Test of Personality)		
I	- .08	-1.64
II	- .86	-2.17*
III	-2.00*	-2.14*
Sense of Personal Worth (California Test of Personality)		
I	-1.91	-3.66*
II	-2.42*	-4.18*
III	-3.05*	-3.99*
Sense of Personal Freedom (California Test of Personality)		
I	-2.67*	-2.22*
II	-1.96	-2.17*
III	-2.06*	-1.93
Feeling of Belonging (California Test of Personality)		
I	-2.19*	-2.88*
II	-2.95*	-2.87*
III	-3.02*	-2.98*
Q_3, Strong Self-Sentiment (Children's Personality Questionnaire)		
I	-1.69	-2.76*
II	- .89	-2.59*
III	-1.67	-2.85*
Q_4, High Ergic Tension (Children's Personality Questionnaire)		
I	1.94	.66
II	1.86	2.19*
III	2.56*	1.86

* Significant at or below the .05 level, two-tailed test

TABLE 6

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON TESTS OF ANXIETY AND RELATED VARIABLES FOR GROUPS OF HIGH- and LOW-CURIOSITY BOYS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
	Freedom From Nervous Symptoms (California Test of Personality)							
I	15	8.86	6.98	14	6.85	8.74	1.25	1.92*
II	50	8.30	7.35	40	7.87	8.16	1.10	.71
III	60	8.36	7.18	49	7.83	9.26	1.28	.95
	Security (Institute of Child Study Security Test)							
I	15	75.80	71.45	14	66.50	95.34	1.33	2.73*
II	50	72.94	102.75	40	69.12	157.24	1.53	1.55
III	60	71.43	142.31	49	68.40	152.78	1.07	1.29
	General Anxiety Scale for Children							
I	15	9.53	48.98	14	11.35	100.20	2.05	-.56
II	50	10.00	34.65	40	8.02	58.33	1.68	.13
III	60	9.70	32.92	49	8.02	52.06	1.58	1.32
	Lie Scale of General Anxiety Scale for Children							
I	15	5.00	11.00	14	5.50	7.04	1.56	-.45
II	50	4.00	9.31	40	5.10	8.76	1.06	-1.73*
III	60	4.03	9.25	49	4.86	8.25	1.12	-1.45
	Children's Manifest Anxiety Scale							
I	15	14.60	73.25	14	17.21	94.95	1.29	- .77
II	50	15.78	61.68	40	16.02	95.81	1.55	-1.29
III	60	15.76	56.24	49	15.63	87.23	1.55	.08
	Lie Scale of Children's Manifest Anxiety Scale							
I	15	2.27	2.78	14	2.86	8.28	2.98	- .67
II	50	2.44	4.29	40	2.83	6.40	1.49	- .78
III	60	2.62	4.82	49	2.67	5.89	1.22	- .13
	Factor O, Insecurity (Children's Personality Questionnaire)							
I	15	1.53	1.55	14	1.92	1.14	1.35	- .91
II	50	1.58	1.30	40	1.87	1.18	1.10	-1.24
III	60	1.65	1.31	49	1.71	1.16	1.12	- .30

* Significant at or below the .05 level, one-tailed test

TABLE 7

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON TESTS OF ANXIETY AND RELATED VARIABLES FOR GROUPS OF HIGH- AND LOW-CURIOSITY GIRLS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Freedom from Nervous Symptoms (California Test of Personality)								
I	16	7.87	8.38	12	7.91	5.17	1.62	- .04
II	37	8.00	7.77	30	7.86	9.22	1.18	.18
III	50	8.10	8.13	41	7.82	8.79	1.08	.44
Security (Institute of Child Study Security Test)								
I	16	76.37	88.65	12	68.91	49.71	1.78	2.39*
II	37	75.10	109.82	30	71.33	93.19	1.17	1.93*
III	50	74.94	157.28	41	72.75	85.13	1.84	.95
General Anxiety Scale for Children								
I	16	12.18	78.16	12	15.58	53.53	1.46	-1.11
II	37	13.89	69.32	30	14.76	65.21	1.06	-.43
III	50	13.64	85.37	41	15.02	64.02	1.33	-.76
Lie Scale of General Anxiety Scale for Children								
I	16	3.81	8.56	12	3.33	2.79	3.07	.55
II	37	3.54	7.37	30	3.97	6.03	1.22	-.67
III	50	3.98	10.18	41	3.80	6.01	1.69	.30
Children's Manifest Anxiety Scale								
I	16	16.81	65.36	12	18.83	60.87	1.07	-.67
II	37	16.10	83.71	30	17.93	61.92	1.35	-.88
III	50	15.52	79.88	41	16.87	65.10	1.23	-.76
Lie Scale of the Children's Manifest Scale								
I	16	2.27	2.78	12	2.86	8.28	2.98	-.67
II	37	3.46	7.26	30	2.80	6.72	1.08	1.01
III	50	3.82	6.84	41	2.92	7.37	1.08	1.59
Factor O, Insecurity (Children's Personality Questionnaire)								
I	16	1.68	2.36	12	1.83	1.06	2.22	-.30
II	37	1.64	1.67	30	1.76	.87	1.91	-.43
III	50	1.54	1.60	41	1.80	1.11	1.44	-1.08

*Significant at or below the .05 level; one-tailed test.

low-curiosity groups of boys. High- and low-curiosity girls did not differ significantly on this test. From a comparison of the means of the four groups, it appears that high-curiosity boys, as a group, are more free from nervous symptoms than low-curiosity boys, low-curiosity girls, or high-curiosity girls.

On the Institute of Child Study Security Test all differences between means of curiosity groups were in the predicted direction with high-curiosity groups having the higher means. For the boys, a significant difference was found between the extreme high- and low-curiosity groups; for the girls, significant differences were found between extreme high- and low-curiosity groups and between consistent high- and low-curiosity groups.

The General Anxiety Scale for Children (GASC) did not reveal any significant differences between high- and low-curiosity groups. Girls, as a whole, scored higher on anxiety than did boys, with the highest mean scores on anxiety being made by low-curiosity girls. The Lie Scale of the General Anxiety Scale for Children showed greatest defensiveness against anxiety by the low-curiosity boys. In the consistent curiosity groups, the low-curiosity boys' mean was significantly greater than the high-curiosity boys' mean, indicating greater defensiveness against anxiety by low-curiosity boys. High- and low-curiosity girls did not differ significantly in defensiveness against anxiety. On the Lie Scale, girls' means were consistently lower than boys' means.

Like the GASC, the Children's Manifest Anxiety Scale did not reveal differences between high- and low-curiosity groups of boys or girls, nor did the Lie Scale of the Children's Manifest Anxiety Scale.

On Factor O, Insecurity, of the Children's Personality Questionnaire all differences were in the predicted direction with low-curiosity boys and girls making higher mean scores than high-curiosity boys and girls. The differences, however, were not significant.

Considering the results from tests of anxiety and related variables reported in this section, the hypothesis concerning anxiety is still in doubt. The evidence from this and the preceding section does indicate greater security for high-curiosity boys as compared with low-curiosity boys.

Thought processes and motivation. -- Compared to low-curiosity children, high-curiosity children were expected to show greater tolerance of ambiguity, a higher level of aspiration, and generally more effective cognitive functioning. A number of measures were analyzed to gain evidence on these variables. The results of the analyses are shown in Tables 8 and 9.

One of the components of the California Test of Personality, withdrawing tendencies, is designed to measure a child's tendencies to substitute a "fantasy world for actual successes in real life." When the results of this test were analyzed, high-curiosity boys were found to be significantly more free of these tendencies than were low-curiosity boys. The results of the analysis may be seen in Table 8. Table 9 presents a similar analysis of girls' scores. Although the differences between high- and low-curiosity girls' mean scores are all in favor of the high-curiosity girls, indicating greater freedom from withdrawing tendencies for high-curiosity girls, the differences were not significant. A comparison of means of boys and girls on this test, shows high-curiosity boys to be more free of withdrawing tendencies (substituting fantasy for action) than any other group.

The Behavior Preference Record yields a score called critical thinking. This variable revealed no significant differences between means of curiosity groups either for boys or for girls.

Factor B, General Intelligence, of the Children's Personality Questionnaire brought out no significant differences between means for boys' high- and low-curiosity groups, but did reveal significant differences between girls' high- and low-curiosity groups, with the high-curiosity girls having the higher means.

TABLE 8

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF VARIABLES RELATED TO THOUGHT PROCESSES AND MOTIVATION FOR HIGH- AND LOW-CURIOSITY BOYS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
	Withdrawing Tendencies (California Test of Personality)							
I	15	9.13	6.40	14	6.28	10.52	1.64	2.62*
II	50	7.96	8.08	40	6.50	10.46	1.29	2.24*
III	60	7.85	8.02	49	6.71	9.58	1.19	1.97*
	Critical Thinking (Behavior Preference Record)							
I	15	73.06	349.06	14	73.07	72.07	4.84	0.00
II	50	71.84	192.54	40	70.97	209.05	1.08	.28
III	60	71.71	167.52	49	72.16	193.18	1.15	-.17

TABLE 8 (continued)

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Factor B, General Intelligence (Children's Personality Questionnaire)								
I	15	4.26	.79	14	4.14	1.05	1.35	.34
II	50	4.02	1.24	40	4.07	1.30	1.04	-.22
III	60	3.95	1.20	49	4.08	1.32	1.10	-.60
Factor J, Internally Restrained (Children's Personality Questionnaire)								
I	15	2.06	1.49	14	2.42	1.18	1.25	-.84
II	50	2.22	1.23	40	2.47	.87	1.41	-1.18
III	60	2.12	1.18	49	2.44	.91	1.29	-1.18
Factor N, Shrewdness (Children's Personality Questionnaire)								
I	15	1.33	1.52	14	2.14	1.36	1.11	-1.81*
II	50	1.62	1.42	40	2.07	1.50	1.05	-1.76*
III	60	1.63	1.28	49	2.04	1.45	1.13	-1.80*
Word Association (Flexibility; Creativity)								
I	15	27.86	88.26	14	21.78	33.10	2.66	2.11*
II	50	25.60	76.81	40	24.92	52.48	1.46	.39
III	60	25.40	76.10	49	24.95	48.78	1.55	.29
Unusual Uses (Creativity)								
I	15	4.40	8.68	14	4.71	9.14	1.05	-.28
II	50	4.04	10.03	40	4.22	7.30	1.37	-.29
III	60	4.16	9.59	49	4.06	7.80	1.22	.18
Total Uses (Fluency of Ideas)								
I	15	17.00	74.85	14	18.78	97.25	1.29	-.51
II	50	15.82	75.94	40	17.35	65.05	1.16	-.86
III	60	16.11	70.13	49	17.22	70.96	1.01	-.68
Consistency (Institute of Child Study Security Test)								
I	15	37.13	297.55	14	18.78	224.02	1.32	3.06*
II	50	32.36	305.21	40	26.92	239.40	1.27	1.56
III	60	30.88	337.15	49	25.87	229.65	1.46	1.55

TABLE 8 (continued)

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Situational Interpretation (Concrete-abstract conceptualization)								
I	15	1.26	.78	14	1.07	.35	2.05	.69
II	50	1.18	.51	40	1.25	.39	1.30	-.49
III	60	1.18	.49	49	1.22	.46	1.04	-.30
Intolerance of Ambiguity								
I	15	8.06	3.35	14	8.28	2.37	1.41	-.34
II	50	7.66	3.16	40	7.62	3.26	1.03	.09
III	60	7.61	2.91	49	7.51	3.54	1.21	.30
Cassel Group Level of Aspiration Test								
I	15	65.93	562.92	14	68.78	280.33	2.00	-.37
II	50	65.82	479.29	40	68.80	610.21	1.27	-.59
III	60	67.13	458.38	49	69.61	544.74	1.18	-.57
Factor F, Happy-Go-Lucky (Children's Personality Questionnaire)								
I	15	2.93	.92	14	3.07	.99	1.07	-.37
II	50	2.94	1.28	40	3.07	.84	1.52	-.62
III	60	2.93	1.38	49	3.02	.81	1.70	-.43
Factor D, Excitability (Children's Personality Questionnaire)								
I	15	1.66	.80	14	2.21	1.25	1.55	-1.44
II	50	1.84	1.03	40	2.02	1.25	1.21	-.81
III	60	1.85	1.04	49	2.00	1.12	1.07	-.74

*Significant at or below the .05 level, one-tailed test.

TABLE 9

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF VARIABLES RELATED TO THOUGHT PROCESSES AND MOTIVATION FOR HIGH- AND LOW-CURIOSITY GIRLS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Withdrawing Tendencies (California Test of Personality)								
I	16	7.18	9.89	12	6.58	12.44	1.25	.46
II	37	7.48	9.36	30	7.06	10.68	1.14	.53
III	50	7.48	9.11	41	7.29	9.11	1.00	.29
Critical Thinking (Behavior Preference Record)								
I	16	72.06	96.59	12	72.41	69.17	1.39	-.10
II	37	72.97	92.86	30	71.86	110.60	1.21	.44
III	50	72.50	89.80	41	71.80	99.21	1.10	.33
Factor B, General Intelligence (Children's Personality Questionnaire)								
I	16	4.62	.38	12	3.50	1.90	4.98	2.62*
II	37	4.43	.80	30	3.56	1.84	2.27	3.00*
III	50	4.34	1.04	41	3.65	1.63	1.55	2.76*
Factor J, Internally Restrained (Children's Personality Questionnaire)								
I	16	1.86	1.45	12	2.33	1.15	1.25	-1.06
II	37	1.86	.95	30	1.93	1.09	1.15	-.27
III	50	1.78	.90	41	1.92	1.01	1.12	-.70
Factor N, Shrewdness (Children's Personality Questionnaire)								
I	16	1.81	1.62	12	1.50	1.54	1.05	.65
II	37	1.70	1.38	30	1.83	1.17	1.17	-.47
III	50	1.76	1.53	41	1.65	1.23	1.24	.41
Word Association (Flexibility; Creativity)								
I	16	29.93	43.39	12	25.08	33.17	1.30	2.07*
II	37	27.70	47.15	30	26.13	54.39	1.15	.89
III	50	28.12	53.37	41	25.82	49.84	1.07	1.51
Unusual Uses (Creativity)								
I	16	4.75	6.20	12	5.08	15.90	2.56	-.25
II	37	4.62	6.35	30	5.16	19.72	3.10	-.59
III	50	5.50	17.64	41	4.87	15.45	1.14	.72

TABLE 9 (continued)

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Total Uses (Fluency of Ideas)								
I	16	21.12	42.38	12	20.33	88.78	2.09	.24
II	37	20.40	57.35	30	20.80	152.23	2.65	-.15
III	50	22.06	117.56	41	20.14	120.52	1.02	.83
Consistency (Institute of Child Study Security Test)								
I	16	39.50	395.73	12	24.25	140.93	2.80	2.52*
II	37	40.37	370.79	30	30.20	224.37	1.65	2.43*
III	50	39.74	325.78	41	32.48	233.75	1.39	2.07*
Situational Interpretation (Concrete-Abstract Conceptualization)								
I	16	1.31	.76	12	.91	.08	9.15	1.69
II	37	1.18	.76	30	1.03	.37	2.03	.85
III	50	1.22	.70	41	1.07	.31	2.20	.99
Intolerance of Ambiguity								
I	16	7.31	4.09	12	7.25	5.11	1.24	.07
II	37	6.91	3.79	30	7.00	4.89	1.28	-.15
III	50	6.86	4.24	41	7.09	4.89	1.15	-.52
Cassel Group Level of Aspiration Test								
I	16	74.12	493.98	12	71.08	671.17	1.35	.32
II	37	76.21	483.67	30	64.30	425.59	1.13	2.28*
III	50	75.32	399.40	41	65.75	366.98	1.08	2.32*
Factor F, Happy-Go-Lucky (Children's Personality Questionnaire)								
I	16	1.81	1.89	12	1.83	2.15	1.13	-.03
II	37	1.78	1.78	30	1.93	1.71	1.03	-.46
III	50	1.82	1.86	41	1.82	1.69	1.10	-.03
Factor D, Excitability (Children's Personality Questionnaire)								
I	16	1.50	.66	12	1.25	.93	1.39	.72
II	37	1.27	.86	30	1.06	.89	1.02	.88
III	50	1.24	.83	41	.97	.77	1.08	1.39

*Significant at or below the .05 level, one-tailed test.

Factor J of the Children's Personality Questionnaire is said by the authors of the test to be somewhat difficult to interpret. They report, however, that the high scores seem to indicate internal restraint; low scores vigor and assertiveness. On this variable, means of low-curiosity groups were found to be consistently higher than the means of high-curiosity groups - for both boys and girls. None of the differences was significant.

Factor N showed significant differences between means of high- and low-curiosity boys, but no significant differences between means of high- and low-curiosity girls. N+ is called shrewdness; N-, naivete. According to the authors of the test, the N+ person is a clear thinker with a realistic but sometimes expedient approach to problems. The N- person is vague, simple, sentimental, naive. The low-curiosity boys have higher means on this factor than have other groups, girls or boys, but since all means are low, it is probably better to say that the high-curiosity boys are more unsophisticated than the low-curiosity boys. No group is high enough to warrant the title of shrewd.

The Word Association Test has been used as a measure of creativity. It seems to require flexibility in shifting rapidly from one frame of reference to another. On this test, the differences between means were all in the expected direction with high-curiosity children showing greater flexibility. The differences were significant in the extreme curiosity groups for both boys and girls.

The Uses Test which has also been used as a test of creativity brought out no significant differences between curiosity groups. This was true both of the Unusual Uses which is a measure of originality, and of Total Uses which is a measure of fluency.

The Consistency score of the Institute of Child Study Security Test yielded higher means for the high-curiosity groups without exception. For boys the difference was significant at the extreme curiosity level; for girls at all levels. This score is said by the author of the test to measure the consistency with which the child ranks the items of the categories of the Security test.

The Situational Interpretation Experiment which was purported to measure conceptualization along the concrete-abstract dimension indicated no significant difference between high- and low-curiosity groups for both sexes and all levels on this variable.

Similarly, the Muuss Test of Intolerance of Ambiguity indicated no significant difference between high- and low-curiosity groups in their reactions to ambiguity. As can be seen in Table 8 and 9, the differences between means of high- and low-curiosity groups were indeed small.

Both the results of the Cassel Group Level of Aspiration Test and of Factor F of the Children's Personality Questionnaire were analyzed for differences between high- and low-curiosity groups in level of aspiration. The Cassel Group Level of Aspiration Test revealed no significant differences between high- and low-curiosity boys. For the girls, however, two of the differences were significant with the high-curiosity girls having significantly higher means for the consistent and total curiosity groups. No significant difference between curiosity groups was found for either boys or girls on Factor F of the *Children's Personality Questionnaire*.

Children scoring high on Factor D of the *Children's Personality Questionnaire* are said by the authors to show a mind-wandering distractibility. None of the differences between curiosity groups was significant for this factor. All groups, both high and low in curiosity, had relatively low means on this factor with the highest means being those of the low-curiosity boys.

From the analyses of this section of the report, we find no support for the hypothesis of greater tolerance of ambiguity by high-curiosity children. We find only partial support for the hypothesis of higher level of aspiration for high-curiosity children. There was no evidence that high-curiosity boys have a higher level of aspiration than low-curiosity boys; there was some evidence that high-curiosity girls have a higher level of aspiration than low-curiosity girls. Regarding thought processes, there were several significant findings. High-curiosity boys were found to be more free of the tendency to withdraw into fantasy than are low-curiosity boys. They were also found to be more simple and unsophisticated in their thinking (less shrewd) than low-curiosity boys. High-curiosity children of the extreme curiosity groups were found to be more flexible in rapidly changing from one frame of reference to another and more consistent in categorizing than are their low-curiosity counterparts.

Moral and ethical values. -- It was hypothesized that compared to low-curiosity children, high curiosity children hold a more-balanced point of view in regard to moral values, and are more responsible for group welfare. The results of the analysis of tests bearing upon these variables are shown in Tables 10 and 11.

The Behavior Preference Record yields two scores, Integrity and Responsibility, which relate to moral and ethical behavior. The analysis shows no significant difference between high- and low-curiosity boys on these variables. For girls there is a significant difference in Responsibility but not in Integrity. The means of high-curiosity girls are significantly higher than the means of low-curiosity girls in Responsiblity for the consistent and total curiosity groups.

Three of the Harris Social Responsibility ratings, Dependability, Square Shooter, and Group Loyalty showed significant differences between high- and low-curiosity groups of both boys and girls in extreme, consistent, and total curiosity groups. The person with a high score on Dependability is one who in the eyes of his peers can be trusted, whose word can be counted on. Similarly, one with a high score on Square Shooter will not take advantage of nor cheat others and will admit his own wrongdoing rather than blame someone else. The one scoring high on Group Loyalty thinks of the good of others rather than his own gain.

Children high on Factor G, Super Ego Strength, of the Children's Personality Questionnaire have high moral standards and are characterized by energy and persistence. According to the authors, this factor involves success in a variety of performances requiring persistence, freedom from oscillation, and good organization of thinking. On this factor, high-curiosity boys consistently had means higher than the means

TABLE 10

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON MEASURES OF MORALITY AND ETHICAL VALUES FOR HIGH- AND LOW-CURIOSITY BOYS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Integrity (Behavior Preference Record)								
I	15	10.33	2.23	14	9.85	2.13	1.04	.86
II	50	10.00	3.06	40	9.90	2.81	1.08	.27
III	60	9.96	3.04	49	9.97	2.93	1.03	-.03
Responsibility (Behavior Preference Record)								
I	15	14.80	21.31	14	13.78	19.41	1.09	.60
II	50	14.92	18.48	40	14.32	21.14	1.14	.62
III	60	15.10	18.29	49	14.38	21.70	1.18	.82
Dependability (Harris Social Responsibility)								
I	15	6.93	28.78	14	2.42	2.72	10.56	3.09*
II	50	7.70	47.68	40	2.95	7.68	6.20	4.43*
III	60	7.93	47.14	49	2.71	7.12	6.61	5.40*
Square Shooter (Harris Social Responsibility)								
I	15	6.33	9.23	14	3.07	4.83	1.90	3.32*
II	50	7.08	20.48	40	3.82	9.27	2.20	4.06*
III	60	7.01	20.15	49	3.34	8.81	2.28	5.10*
Factor G, Super Ego Strength (Children's Personality Questionnaire)								
I	15	3.30	.80	14	2.57	2.26	2.79	1.64
II	50	3.18	1.13	40	2.80	2.06	1.82	1.39
III	60	3.15	1.07	49	2.83	1.97	1.82	1.29
Group Loyalty (Harris Social Responsibility)								
I	15	8.26	17.20	14	2.71	3.91	4.39	4.64*
II	50	7.52	28.13	40	3.27	7.89	3.56	4.86*
III	60	7.65	27.96	49	3.02	7.02	3.98	5.93*
Descriptive Words (Morality)								
I	15	20.66	36.66	14	18.14	20.43	1.79	1.27
II	50	20.10	26.82	40	18.47	22.05	1.21	1.55
III	60	20.10	25.65	49	18.28	18.95	1.35	2.01*

*Significant at or below the .05 level, one-tailed test.

TABLE 11

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON MEASURES OF MORALITY AND ETHICAL VALUES FOR HIGH- AND LOW-CURIOSITY GIRLS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Integrity (Behavior Preference Record)								
I	16	10.37	1.18	12	10.25	2.56	2.17	.23
II	37	10.32	1.44	30	10.03	1.61	1.11	.95
III	50	10.38	1.26	41	10.12	1.70	1.35	.99
Responsibility (Behavior Preference Record)								
I	16	18.31	5.82	12	16.91	15.17	2.60	1.09
II	37	18.16	6.25	30	16.76	11.42	1.82	1.88*
III	50	18.20	5.63	41	17.19	10.56	1.87	1.65*
Dependability (Harris Social Responsibility)								
I	16	9.93	56.86	12	2.58	4.81	11.82	3.69*
II	37	9.13	50.62	30	3.30	8.21	6.16	4.55*
III	50	8.64	44.64	41	2.95	7.99	5.58	5.45*
Square Shooter (Harris Social Responsibility)								
I	16	6.43	12.39	12	3.08	7.35	1.68	2.84*
II	37	6.83	14.08	30	3.53	9.77	1.44	3.93*
III	50	6.88	15.04	41	3.51	9.90	1.51	4.57*
Factor G, Super Ego Strength (Children's Personality Questionnaire)								
I	16	3.37	1.45	12	3.41	1.53	1.06	-.08
II	37	3.29	1.32	30	3.16	1.10	1.19	.48
III	50	3.24	1.41	41	3.21	.97	1.44	.08
Group Loyalty (Harris Social Responsibility)								
I	16	6.68	21.56	12	3.66	8.24	2.61	2.11*
II	37	7.51	22.31	30	3.46	7.01	3.18	4.42*
III	50	7.42	21.43	41	3.58	6.74	3.17	4.97*
Descriptive Words (Morality)								
I	16	18.06	28.99	12	15.91	36.08	1.24	.97
II	37	18.43	24.08	30	17.26	27.51	1.14	.93
III	50	18.48	21.43	41	17.70	30.36	1.41	.71

*Significant at or below the .05 level, one-tailed test.

of low-curiosity boys. For the extreme groups the difference approached significance. High- and low-curiosity girls did not differ significantly on this variable.

Descriptive Words, a test of morality devised by Getzels and Jackson, showed significant differences between means of high- and low-curiosity groups of boys and girls for the total curiosity group. All differences between means were in the expected direction with high-curiosity boys scoring higher than low-curiosity boys and high-curiosity girls scoring higher than low-curiosity girls.

On the whole, the hypotheses concerning the superior moral and ethical values of the high-curiosity children seem to be supported about equally for boys and girls by the findings of this analysis.

Overall personal maturity and adjustment. -- In addition to hypothesizing that high-curiosity children are superior in certain specific variables of personal adjustment, it was hypothesized that they are superior in total adjustment and maturity. The results of the analysis of test results bearing on this hypothesis are presented in Table 12.

The Children's Personality Questionnaire revealed significant differences between the means of high- and low-curiosity boys for extreme and consistent curiosity groups and a near-significant difference for the total group. In each instance, the mean of the high-curiosity boys exceeded the mean of the low-curiosity boys. On the same factor, high- and low-curiosity girls did not differ significantly. While high-curiosity boys tend to surpass low-curiosity boys in emotional maturity, high-curiosity girls do not differ significantly from low-curiosity girls on this factor.

The Total Personal Adjustment section of the California Test of Personality yielded essentially similar results. High-curiosity boys had means consistently higher than the means of low-curiosity boys, with all differences being significant. High- and low-curiosity girls did not differ significantly in total personal adjustment.

From the evidence of this analysis, the hypothesis of greater maturity and better total adjustment for high-curiosity children is supported in the case of boys and unsupported in the case of girls.

TABLE 12

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON MEASURES OF OVERALL PERSONAL ADJUSTMENT AND MATURITY FOR HIGH- AND LOW-CURIOSITY BOYS AND GIRLS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Factor C, Ego Strength (Children's Personality Questionnaire) Boys								
I	15	3.66	.38	14	2.85	1.36	3.57	2.31*
II	50	3.60	.73	40	3.22	1.35	1.84	1.70*
III	60	3.55	.89	49	3.22	1.26	1.40	1.61
Total Personal Adjustment (California Test of Personality) Boys								
I	15	52.86	98.26	14	40.00	234.15	2.38	2.66*
II	50	50.90	94.45	40	44.47	200.30	2.12	2.44*
III	60	50.56	97.26	49	45.22	184.17	1.89	2.30*
Factor C, Ego Strength (Children's Personality Questionnaire) Girls								
I	16	3.25	.73	12	3.33	1.15	1.57	-.22
II	37	3.43	.75	30	3.26	1.02	1.36	.70
III	50	3.40	.65	41	3.36	1.08	1.66	.17
Total Personal Adjustment (California Test of Personality) Girls								
I	16	51.75	121.40	12	48.58	113.90	1.06	.76
II	37	52.24	129.07	30	50.10	107.95	1.19	.80
III	50	52.12	127.69	41	51.26	95.30	1.33	.38

*Significant at or below the .05 level, one-tailed test.

Social Variables

Some of the findings of the previous section bear upon the questions considered in this section and _vice versa_, therefore, when the findings are summarized, reference will be made to whichever section is appropriate.

Social prejudice. -- It was hypothesized that high-curiosity children are more free of social prejudice than are low-curiosity children. Two instruments were used to gain evidence on the question: a social distance scale and the _Children's Antidemocratic Attitude Scale_. Table 13 contains the results of the analysis of the scores on the two scales.

The social distance scale did not discriminate between high- and low-curiosity girls. The girls of the high- and low-curiosity groups were apparently equally accepting of people different from themselves. The high-curiosity boys' means were consistently higher than the low-curiosity boys' means, indicating greater willingness to accept others who are different from themselves on the part of the high-curiosity boys. In the extreme curiosity group of boys the difference between means was significant.

On the _Children's Antidemocratic Attitudes Scale_ the low-curiosity boys consistently had higher means than the high-curiosity boys and the low-curiosity girls consistently had higher means than the

3

high curiosity girls. The differences were significant for the extreme and total curiosity groups of boys and for the total curiosity group of girls. On this scale, high scores indicate antidemocratic attitudes.

The hypothesis of less social prejudice on the part of high-curiosity children seems particularly well supported in the case of the boys with both scales giving evidence favorable to the hypothesis. It is not supported in the case of the girls.

TABLE 13

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON TESTS OF SOCIAL PREJUDICE OF HIGH- AND LOW-CURIOSITY BOYS AND GIRLS

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
			Other People (Social Distance) Boys					
I	15	393.80	8770.88	14	343.00	4072.76	2.15	1.71*
II	50	404.70	7312.05	40	390.47	6874.00	1.06	.79
III	60	403.40	7098.65	49	390.67	6406.64	1.10	.80
			Children's Antidemocratic Attitude Scale (Boys)					
I	15	7.40	17.40	14	12.07	20.84	1.19	-2.87*
II	50	8.92	16.07	40	10.30	16.67	1.03	-1.60
III	60	8.86	15.23	49	10.22	17.38	1.14	-1.74*
			Other People (Social Distance) Girls					
I	16	439.37	5706.11	12	442.83	4484.87	1.27	- .12
II	37	419.51	5647.03	30	419.53	5448.95	1.03	.00
III	50	419.22	6101.27	41	410.60	7003.94	1.14	.50
			Children's Antidemocratic Attitude Scale (Girls)					
I	16	7.68	17.82	12	10.08	24.08	1.35	-1.35
II	37	7.62	16.74	30	8.90	19.33	1.15	-1.22
III	50	7.40	15.71	41	9.04	18.54	1.18	-1.88*

* Significant at or below the .05 level, one-tailed test.

Social participation. -- Several of the hypotheses of this study were related to social participation. High-curiosity children were hypothesized to exhibit more healthy participation in group activities, to show a higher level of social skill, to be more responsible for group welfare and to be more mature in their social adjustment than are low-curiosity children. Tables 14 and 15 show the results of the tests of these hypotheses for boys and girls, respectively.

Six of the components of the Social Adjustment section of the California Test of Personality deal with the variables mentioned above. The Social Standards component was found to discriminate between high- and low-curiosity boys. The means of the high-curiosity boys significantly exceeded the means of the low-curiosity boys for all groups. According to the authors of the test, children scoring high on this component "understand the rights of others and appreciate the necessity of subordinating certain desires to the needs of the group." High- and low-curiosity girls did not differ on this component.

On the component, Social Skills, the difference between means of high- and low-curiosity groups was in the hypothesized direction without exception. For girls, none of the differences was significant; for boys, the differences in the consistent and total curiosity groups were significant.

Analysis of scores on another component, Anti-Social Tendencies, showed a significant difference between high- and low-curiosity groups of boys for the extreme curiosity group, with the high-curiosity boys being more free from anti-social tendencies than are low-curiosity boys.

High- and low-curiosity girls did not differ on this variable.

Three of the components of the California Test of Personality deal with a child's relations with his home, school, and community, respectively. None of the components revealed significant differences between high- and low-curiosity girls. For the boys, however, differences between means of high- and low-curiosity boys were all in the expected direction, with the high-curiosity boys having the higher means. The differences between means were significant for the School and Community Relations components.

On three of the components of the Behavior Preference Record; Cooperation, Friendliness and Leadership differences between means of high- and low-curiosity girls were in the expected direction, with some differences being significant. No significant difference between means of high- and low-curiosity boys was found for these three variables.

Factors A, E, and H, of the Children's Personality Questionnaire revealed no significant differences between high- and low-curiosity groups of girls or boys. These factors are Sociability, Dominance, and Venturesomeness, respectively.

On Factor I, Tender mindedness, low-curiosity girls' means exceeded high-curiosity girls' means - significantly in two cases. High-curiosity boys did not differ from low-curiosity boys in their scores on this factor. Children high on this factor are rated anti-social, and are cautious, easily tired, complaining of headaches and stomach upsets.

TABLE 14

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF HIGH- AND LOW-CURIOSITY GROUPS OF BOYS ON TESTS OF SOCIAL PARTICIPATION AND SOCIAL ADJUSTMENT

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Social Standards (California Test of Personality)								
I	15	9.93	2.49	14	8.00	7.84	3.14	2.26*
II	50	9.48	3.76	40	8.60	5.47	1.45	1.91*
III	60	9.38	3.42	49	8.71	4.70	1.37	1.70*
Social Skills (California Test of Personality)								
I	15	8.13	6.26	14	6.85	7.82	1.24	1.29*
II	50	7.76	5.61	40	6.80	8.47	1.50	1.68*
III	60	7.71	5.56	49	6.85	8.83	1.58	1.64*
Anti-Social Tendencies (California Test of Personality)								
I	15	8.60	2.54	14	6.21	12.33	4.85	2.32*
II	50	7.70	5.80	40	7.07	10.37	1.78	1.01
III	60	7.65	5.75	49	7.14	9.58	1.66	.93
Family Relations (California Test of Personality)								
I	15	8.80	7.60	14	7.00	13.07	1.72	1.49
II	50	8.66	6.14	40	8.15	10.54	1.71	.82
III	60	8.61	6.00	49	8.30	9.67	1.61	.56
School Relations (California Test of Personality)								
I	15	8.40	6.11	14	5.50	13.34	2.18	2.48*
II	50	7.92	7.50	40	6.90	12.75	1.70	1.48
III	60	7.95	8.11	49	6.93	11.35	1.39	1.66*
Community Relations (California Test of Personality)								
I	15	9.93	.49	14	8.28	9.75	19.70	1.92*
II	50	9.48	2.41	40	8.57	5.37	2.22	2.11*
III	60	9.45	2.69	49	8.59	5.16	1.91	2.21*
Cooperation (Behavior Preference Record)								
I	15	5.93	5.35	14	5.78	4.02	1.32	.18
II	50	5.52	5.69	40	5.55	7.12	1.19	-.05
III	60	5.61	5.93	49	5.48	6.71	1.13	.26

TABLE 14 (continued)

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
				Friendliness (Behavior Preference Record)				
I	15	12.53	6.55	14	12.00	4.46	1.46	.61
II	50	11.96	6.03	40	11.97	7.35	1.21	-.02
III	60	11.98	6.05	49	12.02	7.52	1.24	-.07
				Leadership (Behavior Preference Record)				
I	15	14.46	7.40	14	15.21	2.64	2.80	- .90
II	50	15.00	6.16	40	14.70	5.44	1.13	.58
III	60	15.05	5.64	49	14.53	4.87	1.15	1.18
				Factor A, Sociable (Children's Personality Questionnaire)				
I	15	2.86	1.55	14	2.50	1.50	1.03	.79
II	50	2.60	1.14	40	2.50	1.02	1.11	.45
III	60	2.58	1.02	49	2.57	.91	1.12	.06
				Factor E, Dominance (Children's Personality Questionnaire)				
I	15	3.26	1.35	14	3.35	1.01	1.33	- .22
II	50	3.26	1.09	40	3.30	1.34	1.22	- .16
III	60	3.26	1.04	49	3.30	1.17	1.12	- .19
				Factor H, Venturesome (Children's Personality Questionnaire)				
I	15	3.00	1.14	14	2.71	1.60	1.40	.65
II	50	2.94	.95	40	2.92	1.40	1.46	.06
III	60	2.90	.87	49	2.89	1.17	1.35	.01
				Factor I, Tender Minded (Children's Personality Questionnaire)				
I	15	1.40	1.54	14	1.28	1.29	1.18	.25
II	50	1.24	1.12	40	1.35	1.15	1.02	- .48
III	60	1.26	1.41	49	1.20	1.12	1.26	.28
				Committee (Harris Social Responsibility)				
I	15	9.00	35.28	14	1.92	2.37	14.83	4.45*
II	50	8.20	42.12	40	2.70	6.62	6.35	5.47*
III	60	8.06	41.52	49	2.53	5.83	7.11	6.14*

* Significant at or below the .05 level, one-tailed test.

TABLE 15

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF HIGH- AND LOW-CURIOSITY GROUPS OF GIRLS ON TESTS OF SOCIAL PARTICIPATION AND SOCIAL ADJUSTMENT

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
			Social Standards (California Test of Personality)					
I	16	10.37	1.71	12	10.25	1.11	1.54	.27
II	37	10.43	1.86	30	10.16	2.35	1.26	.74
III	50	10.50	1.68	41	10.29	2.36	1.40	.68
			Social Skills (California Test of Personality)					
I	16	8.87	2.78	12	8.16	3.96	1.42	.99
II	37	8.94	4.66	30	8.50	3.15	1.47	.92
III	50	9.16	4.66	41	8.68	2.92	1.59	1.17
			Anti-Social Tendencies (California Test of Personality)					
I	16	8.43	7.46	12	8.66	4.60	1.62	- .24
II	37	8.86	7.50	30	8.93	4.61	1.62	- .11
III	50	9.12	6.39	41	8.90	4.49	1.42	.44
			Family Relations (California Test of Personality)					
I	16	9.25	6.60	12	8.58	8.26	1.25	.63
II	37	9.51	6.53	30	9.43	5.84	1.11	.13
III	50	9.70	5.68	41	9.60	5.59	1.01	.18
			School Relations (California Test of Personality)					
I	16	8.25	8.06	12	8.75	4.75	1.69	- .52
II	37	8.64	7.01	30	8.46	5.91	1.18	.29
III	50	8.82	6.68	41	8.56	6.00	1.11	.48
			Community Relations (California Test of Personality)					
I	16	9.93	1.79	12	9.50	3.54	1.97	.68
II	37	9.94	1.88	30	9.73	2.34	1.24	.59
III	50	10.08	1.74	41	9.85	2.67	1.53	.71
			Cooperation (Behavior Preference Record)					
I	16	7.31	1.69	12	7.08	4.62	2.72	.32
II	37	7.32	2.33	30	6.83	3.17	1.36	1.19
III	50	7.44	2.12	41	6.68	3.27	1.53	2.16*

TABLE 15 (continued)

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
			Friendliness (Behavior Preference Record)					
I	16	14.31	3.69	12	14.00	6.72	1.82	.35
II	37	14.16	3.19	30	13.40	5.48	1.71	1.46
III	50	14.22	3.44	41	13.48	5.10	1.48	1.66*
			Leadership (Behavior Preference Record)					
I	16	15.93	1.52	12	14.41	4.08	2.67	2.30*
II	37	15.81	1.71	30	15.26	3.23	1.88	1.38
III	50	15.84	1.44	41	15.31	2.72	1.88	1.69*
			Factor A, Sociable (Children's Personality Questionnaire)					
I	16	3.43	.92	12	3.16	.69	1.33	.79
II	37	3.18	.93	30	3.36	1.13	1.21	- .70
III	50	3.14	1.14	41	3.36	.98	1.15	-1.04
			Factor E, Dominance (Children's Personality Questionnaire)					
I	16	2.87	.91	12	2.83	1.60	1.75	.09
II	37	2.64	.90	30	2.76	1.15	1.27	- .47
III	50	2.72	.89	41	2.68	.97	1.08	.18
			Factor H, Venturesome (Children's Personality Questionnaire)					
I	16	2.62	1.98	12	2.08	2.44	1.23	.94
II	37	2.59	1.69	30	2.36	1.34	1.25	.75
III	50	2.68	1.52	41	2.39	1.39	1.09	1.14
			Factor I, Tender Minded (Children's Personality Questionnaire)					
I	16	2.31	1.29	12	2.75	.93	1.39	-1.09
II	37	2.29	1.15	30	2.80	1.61	1.39	-1.72*
III	50	2.32	1.20	41	2.87	1.50	1.25	-2.26*
			Committee (Harris Social Responsibility)					
I	16	8.56	55.86	12	3.08	18.62	2.99	2.43*
II	37	9.95	49.16	30	2.70	12.01	4.09	4.83*
III	50	8.52	42.49	41	2.51	9.70	4.37	5.76*

* Significant at or below the .05 level, one-tailed test.

Committee, a measure of social responsibility, yielded significant differences between all high- and low-curiosity groups, both for boys and for girls, with the high-curiosity groups having the higher means. A person scoring high is one who in the opinion of his classmates can be counted upon to get things done, well and promptly.

A review of the analysis reported in this section shows several findings favorable to the hypothesis that high-curiosity children exceed low-curiosity children in their social adjustment and social participation both for boys and for girls.

Overall social adjustment. -- High-curiosity children were hypothesized to show better overall social adjustment when compared to low-curiosity children. The results of the analysis of the scores of two tests dealing with responsible social attitudes and overall social adjustment are shown in Table 16. On the Harris *Social Attitudes Scale* the means of high-curiosity groups exceeded the means of low-curiosity groups without exception. In all cases but one the differences were significant. On the Social Adjustment section of the *California Test of Personality*, also, differences between means were without exception in favor of the high-curiosity groups. For the boys, all differences were significant, for the girls, none was significant.

The evidence from this analysis is overwhelmingly in favor of the hypothesis of better overall social adjustment on the part of high-curiosity boys when compared to low-curiosity boys. For the girls, the evidence is not so overwhelming, but is considerable, in favor of high-curiosity girls' superiority to low-curiosity girls in overall social adjustment.

Total adjustment. -- It was hypothesized that high-curiosity children are making a better overall adjustment than are low-curiosity children. One test, the California Test of Personality, yields a score on total adjustment, including evidence from both the personal adjustment and social adjustment sections of the test. The scores were analyzed and the results are presented in Table 17. All differences between means of curiosity groups are in favor of the high-curiosity groups. In the case of the boys all differences are significant; in the case of the girls, none is significant. The evidence from this test indicates that high-curiosity boys are superior to low-curiosity boys in their total personal and social adjustment. When this finding is considered with the findings reported in the previous sections the decision in favor of the hypothesis can be made with even greater confidence.

TABLE 16

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF HIGH- AND LOW-CURIOSITY GROUPS OF BOYS AND GIRLS ON TESTS OF OVERALL SOCIAL ADJUSTMENT

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
			Social Attitudes Scale - Boys					
I	15	38.93	53.78	14	32.14	67.97	1.26	2.33*
II	50	36.58	51.63	40	34.32	41.71	1.23	1.56
III	60	36.96	48.67	49	34.12	40.52	1.20	2.22*

TABLE 16 (Continued)

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Social Adjustment (California Test of Personality) Boys								
I	15	53.86	63.55	14	42.35	265.47	4.17	2.38*
II	50	51.02	92.38	40	46.27	205.79	2.22	1.79*
III	60	50.78	94.34	49	46.69	183.50	1.94	1.77*
Social Attitudes Scale - Girls								
I	16	42.56	13.06	12	37.91	27.71	2.12	2.62*
II	37	41.62	19.51	30	38.73	26.54	1.36	2.43*
III	50	41.24	31.77	41	38.95	23.79	1.33	2.07*
Social Adjustment (California Test of Personality) Girls								
I	16	55.12	85.71	12	53.91	66.81	1.28	.36
II	37	56.37	99.24	30	55.23	59.49	1.66	.53
III	50	57.40	92.61	41	55.90	63.19	1.46	.81

*Significant at or below .05 level, one-tailed test.

TABLE 17

RESULTS OF TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF HIGH- AND LOW-CURIOSITY BOYS AND GIRLS ON THE TOTAL ADJUSTMENT SCORE OF THE CALIFORNIA TEST OF PERSONALITY

	High Curiosity			Low Curiosity				
	N	Mean	Variance	N	Mean	Variance	F	t
Boys								
I	15	106.73	269.06	14	82.35	924.09	3.43	2.66*
II	50	101.92	322.27	40	90.75	748.50	2.32	2.22*
III	60	101.35	321.68	49	91.91	666.82	2.07	2.16*
Girls								
I	15	106.87	325.18	14	102.50	299.90	1.08	.64
II	50	108.62	398.29	40	105.33	280.85	1.41	.73
III	60	109.54	386.53	49	107.17	271.49	1.42	.62

*Significant at or below .05 level, one-tailed test.

In the case of the girls the evidence is not so abundant as in the case of the boys. High-curiosity girls were found, however, to be superior to low-curiosity girls in self-reliance, in security, in consistency in categorizing and in flexibility in shifting from one frame of reference to another. They were also found to surpass low-curiosity girls in dependability, leadership, and in responsible social attitudes.

Parental Attitudes

It had been expected that the parents of high-curiosity children would differ from the parents of low-curiosity children in their attitudes toward child rearing and home life. The scores of 27 pairs of mothers and fathers of high-curiosity boys were compared with those of 30 pairs of mothers and fathers of low-curiosity boys on the various subscales of the Parental Attitude Research Instruments. Similarly, the scores of 15 pairs of parents of high-curiosity girls were compared with those of a like number of pairs of parents of low-curiosity girls.

The fathers of high-curiosity boys were found to differ significantly from the fathers of low-curiosity boys in their scores on six subscales. As is shown in Table 18, fathers of low-curiosity boys scored significantly higher than fathers of high-curiosity boys on Fostering Dependency, Seclusiveness, Harsh Punishment, Ascendancy of Husband, and Suppression of Sexuality; fathers of high-curiosity boys scored higher than fathers of low-curiosity boys on the Equalitarianism subscale. Mothers of low-curiosity boys (See Table 20) scored significantly higher than mothers of high-curiosity boys on the subscales: Fostering Dependency, Excluding Outside Influences, and Intrusiveness.

Examples of items making up the various subscales which were found to differentiate parents of high-curiosity boys from parents of low-curiosity boys are given below:

Fathers: Fostering Dependency (Higher scores made by fathers of low-curiosity boys)

A child is most lovable when he is small and helpless.
Parents should try to prevent all difficulties which might make a child unhappy.

Fathers: Seclusiveness (Higher scores made by fathers of low-curiosity boys)

The home is the only thing that matters to a good father.
A good father will find enough social life within the family.

Fathers: Harsh Punishment (Higher scores made by fathers of low-curiosity boys)

A good spanking is often the only way to convince children that you mean it when you tell them to go to sleep.
A child deserves to be slapped when he talks back to his parents.

Fathers: Ascendancy of Husband (Higher scores made by fathers of low-curiosity boys)

A wife won't respect a husband unless he acts like the boss.
A father's duty is to see to it that the whole family does what he knows is best.

Fathers: Equalitarianism (Higher scores made by fathers of high-curiosity boys)

> Parents must earn the respect of their children by the way they act.
> Children are too often asked to do all the compromising and adjusting and that is not fair.

Fathers: Suppression of Sexuality (Higher scores made by fathers of low-curiosity boys)

> A well-behaved child isn't curious about sex.
> There is usually something wrong with a child who asks a lot of questions about sex.

Mothers: Fostering Dependency (Higher scores made by mothers of low-curiosity boys)

> Parents should know better than to allow their children to be exposed to difficult situations.
> Children should be kept away from all hard jobs which might be discouraging.

Mothers: Excluding Outside Influences (Higher scores made by mothers of low-curiosity boys)

> It's best for the child if he never gets started wondering whether his mother's views are right.
> Children should never learn things outside the home which make them doubt their parents.

Mothers: Intrusiveness (Higher scores made by mothers of low-curiosity boys)

> A mother should make it her business to know everything her children are thinking.
> A child should never keep a secret from his parents.

When the differences between means of scores of parents of high- and low-curiosity girls on the various subscales were examined, none was found to be significant. From the analysis, it appears that parents of high-curiosity boys differ significantly from parents of low-curiosity boys in some of their attitudes toward child rearing and family life. It also appears that parents of high-curiosity girls do not differ from parents of low-curiosity girls in any of the attitudes toward child rearing and family life measured by the Parental Attitudes Research Instrument.

Summary

Separate criterion groups were established for boys and girls and the analysis of data was carried out separately for each sex. The findings are as follows:

The measures of self-acceptance and self-sufficiency generally show high-curiosity boys to be superior to low-curiosity boys. High- and low-curiosity girls generally do not differ significantly on these measures, but where differences approach significance, they are in favor of the high-curiosity girls.

Analyses of measures of anxiety, security and related variables show high-curiosity boys to be more secure and more free from nervous symptoms than are low-curiosity boys. Tests of anxiety per se do not show significant differences between high- and low-curiosity boys. High-curiosity girls score significantly higher than low-curiosity girls on security. As in the case of the boys, differences on the anxiety scales are generally in the predicted direction, but are not significant.

TABLE 18

MEANS AND t'S FOR TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON THE SUB-SCALES OF THE PARENTAL ATTITUDES RESEARCH INSTRUMENT FOR FATHERS OF HIGH- AND LOW-CURIOSITY BOYS

	Fathers of High-Curiosity Boys (N=27)	Fathers of Low-Curiosity Boys (N=30)	
Sub-scale	Mean	Mean	t
Encouraging Verbalization	25.02	24.66	.47
Fostering Dependency	14.70	17.26	-2.64*
Seclusiveness	15.77	18.96	-3.38*
Breaking the Will	17.33	17.90	- .52
Harsh Punishment	18.81	21.93	-2.51*
Deception	14.74	15.80	- .99
Marital Conflict	25.40	24.03	1.29
Equalitarianism	26.29	24.53	2.12*
Non-Punishment	12.07	12.06	.01
Demanding Activity	21.40	22.00	- .46
Expressing Affection	23.18	24.16	-1.24
Irresponsibility of Father	17.48	16.80	.56
Suppression of Aggression	14.11	15.56	-1.47
Deification of Parent	19.33	20.90	-1.22
Excluding Outside Influences	17.07	18.26	- .98
Irritability	19.59	20.63	- .98
Strictness	21.70	23.16	-1.32
Suppression of Sexuality	14.51	16.33	-1.75*
Ascendancy of Husband	19.66	23.40	-2.69*
Comradeship	25.70	26.13	- .51
Inconsideration of Wife	22.14	23.06	- .79
Avoid Expression of Affection	16.22	16.76	- .53
Avoid Communication	15.07	15.53	- .51
Autonomy of Child	25.59	24.96	.79
Achievement Demand	23.66	23.66	.00
Complaint of Ascendancy of Wife	19.14	20.46	-1.19
Suppression of Affection	19.40	20.80	-1.23
Change Orientation	19.03	19.80	- .65
Forcing Independence	21.62	21.83	- .23
Past Orientation	20.59	20.70	- .13

* Significant at or below the .05 level, one-tailed test.

TABLE 19

MEANS AND t'S FOR TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON THE SUB-SCALES OF THE PARENTAL ATTITUDES RESEARCH INSTRUMENT FOR FATHERS OF HIGH- AND LOW-CURIOSITY GIRLS

	Fathers of High-Curiosity Girls (N=15)	Fathers of Low-Curiosity Girls (N=15)	
Sub-scale	Mean	Mean	t
Encouraging Verbalization	25.26	24.86	.31
Fostering Dependency	15.20	16.20	- .65
Seclusiveness	16.86	18.33	- .74
Breaking the Will	17.73	17.13	.33
Harsh Punishment	20.80	18.66	1.27
Deception	16.73	14.06	1.66
Marital Conflict	25.00	23.80	.92
Equalitarianism	24.66	24.66	.00
Non-Punishment	12.46	11.66	.56
Demanding Activity	21.53	20.53	.73
Expressing Affection	23.86	23.26	.53
Irresponsibility of Father	15.66	14.13	.93
Suppression of Aggression	15.20	14.93	.17
Deification of Parent	20.66	19.46	.69
Excluding Outside Influences	17.66	16.06	.89
Irritability	20.40	19.80	.38
Strictness	21.93	21.13	.50
Suppression of Sexuality	15.73	15.00	.38
Ascendancy of Husband	23.53	20.53	1.39
Comradeship	26.13	26.33	- .21
Inconsideration of Wife	20.86	21.46	- .30
Avoid Expression of Affection	15.73	16.60	- .51
Avoid Communication	15.00	15.66	- .47
Autonomy of Child	25.33	24.53	.73
Achievement Demand	23.60	22.80	.73
Complaint of Ascendancy of Wife	20.13	19.40	.41
Suppression of Affection	20.26	19.00	.80
Change Orientation	20.26	20.46	-.11
Forcing Independence	20.46	20.66	-.14
Past Orientation	20.26	22.26	-1.63

TABLE 20

MEANS AND t'S FOR TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON THE SUB-SCALES OF THE PARENTAL ATTITUDES RESEARCH INSTRUMENT FOR MOTHERS OF HIGH- AND LOW-CURIOSITY BOYS

	Mothers of High-Curiosity Boys (N=27)	Mothers of Low-Curiosity Boys (N=30)	
Sub-scale	Mean	Mean	t
Encouraging Verbalization	16.59	16.46	.24
Fostering Dependency	7.96	9.57	-2.46*
Seclusion of Mother	11.00	11.60	-.69
Breaking of Will	10.25	11.46	-1.65
Martyrdom	8.81	9.33	-.76
Fear of Harming the Baby	12.33	12.56	-.31
Marital Conflict	15.33	15.30	.05
Strictness	15.22	15.50	-.42
Irritability	14.44	13.76	.96
Excluding Outside Influences	11.07	12.76	-2.15*
Deification	12.96	13.50	-.66
Suppression of Aggression	10.11	10.76	-1.06
Rejection of Homemaking	11.14	10.60	.64
Equalitarianism	15.33	15.36	-.05
Approval of Activity	13.37	13.26	.16
Avoidance of Communication	9.93	9.73	.24
Inconsiderateness of Husband	11.00	11.43	-.47
Suppression of Sexuality	8.63	9.33	-1.07
Ascendancy of the Mother	10.70	10.23	.58
Intrusiveness	8.67	11.36	-3.42*
Comradeship and Sharing	17.44	17.73	-.51
Acceleration of Development	10.66	11.16	-.55
Dependency of the Mother	10.74	11.13	-.52

*Significant at or below the .05 level, one-tailed test.

TABLE 21

MEANS AND t'S FOR TESTS OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS ON THE SUB-SCALES OF THE PARENTAL ATTITUDES RESEARCH INSTRUMENT FOR MOTHERS OF HIGH- AND LOW-CURIOSITY GIRLS

	Mothers of High-Curiosity Girls (N=15)	Mothers of Low-Curiosity Girls (N=15)	
Sub-scale	Mean	Mean	t
Encouraging Verbalization	16.73	16.66	.09
Fostering Dependency	8.87	9.20	-.36
Seclusion of Mother	12.06	11.86	.18
Breaking of Will	10.60	11.00	-.47
Martyrdom	8.87	9.07	-.21
Fear of Harming the Baby	12.46	11.73	.68
Marital Conflict	15.00	15.53	-.52
Strictness	15.20	14.46	.78
Irritability	13.60	14.86	-1.19
Excluding Outside Influences	10.60	11.26	-.62
Deification	12.13	12.26	-.11
Suppression of Aggression	9.67	10.13	-.60
Rejection of Homemaking	11.60	11.06	.45
Equalitarianism	15.00	14.26	.91
Approval of Activity	12.13	13.20	-1.01
Avoidance of Communication	9.40	10.00	-.66
Inconsiderateness of Husband	11.53	11.60	-.05
Suppression of Sexuality	8.80	8.87	-.07
Ascendancy of the Mother	11.26	9.87	1.26
Intrusiveness	9.73	10.26	-.43
Comradeship and Sharing	17.26	17.73	-.66
Acceleration of Development	11.20	9.80	1.19
Dependency of the Mother	12.26	10.80	1.37

On measures of thinking processes and motivation, high-curiosity boys are found to be superior to low-curiosity boys in freedom from tendencies to substitute fantasy for reality, in flexibility in shifting from one frame of reference to another, in simplicity or naivete, and in consistency in categorizing. No significant differences are found between high- and low-curiosity boys in assertiveness, in fluency of production of ideas, in conceptualization along a concrete-abstract dimension, in intolerance of ambiguity, in level of aspiration, and in distractibility. On this set of measures, high-curiosity girls exceed low-curiosity girls in flexibility in shifting rapidly from one frame of reference to another, in consistency in categorizing, and in general intelligence. This latter finding is at variance with the results of the Lorge-Thorndike intelligence test which revealed no significant difference between the two groups in average intelligence. It would seem that the two tests are not measuring the same aspects of intelligence in the case of the girls. The two tests agree in the case of the boys. High- and low-curiosity girls do not differ significantly in mean performance on the majority of instruments in this group.

On tests dealing with moral and ethical values, high-curiosity boys significantly exceed low-curiosity boys in ratings made by their peers on social responsibility. They are seen by their peers as being more trustworthy, reliable, and sensitive to the needs of others than are low-curiosity boys. On these same measures, the findings for high- and low-curiosity girls parallel those for the boys. High-curiosity girls exceed the low-curiosity girls in their ratings on the same variables which brought out significant differences between high- and low-curiosity boys. High-curiosity children did not significantly surpass low-curiosity children on the Getzels-Jackson test of Morality, the factor of Super Ego Strength, nor on the Behavior Preference subscale, Integrity.

On measures of total personal adjustment and emotional maturity, high-curiosity boys exceed low-curiosity boys at a highly significant level; on these same measures high-curiosity girls do not excel over low-curiosity girls.

Similar results are obtained on two measures of social prejudice. High-curiosity boys are significantly more free of social prejudice than are low-curiosity boys. High- and low-curiosity girls do not differ significantly in this respect, although differences which approach significance are in the expected direction.

On tests related to social participation high-curiosity boys score significantly higher than low-curiosity boys in social standards, in freedom from anti-social tendencies, in healthy school and community relations, and in social responsibility. They do not differ significantly on measures of social skills, family relations, friendliness, sociability, dominance, venturesomeness, and tender mindedness. The mean scores of high-curiosity girls significantly exceed those of low-curiosity girls on tests of leadership and of social responsibility; they do not differ significantly from each other on the other tests related to social participation which are mentioned above.

On tests of social attitudes and overall social adjustment as well as on a test of overall personal and social adjustment, high-curiosity boys score significantly higher than low-curiosity girls on only one, social attitudes.

On measures of parental attitudes, fathers of high-curiosity boys score significantly higher than fathers of low-curiosity boys on Equalitarianism, while fathers of low-curiosity boys score significantly higher on Fostering Dependency, Seclusiveness, Harsh Punishment, Ascendancy of Husband, and Suppression of Sexuality. Mothers of low-curiosity boys make significantly higher scores than the mothers of high-curiosity boys on Fostering Dependency, Excluding Outside Influences, and Intrusiveness. Parents of high-curiosity girls do not differ from parents of low-curiosity girls in their attitudes toward child-rearing and family life.

On the whole, the analysis of data in this study yields results favorable to the hypotheses set forth in Chapter i of only boys are considered. In the case of girls, the evidence tends to be supporting, but is not nearly so conclusive as in the case of boys.

CHAPTER V

SUMMARY AND CONCLUSIONS

It was the major purpose of this study to identify some of the personal and social variables differentiating children who are high in curiosity from those who are low. More specifically, it was the objective of this investigation to seek answers to the following questions:

1. Do children of high curiosity differ from children of low curiosity in self-adjustment and self-development?
2. Do children of high curiosity differ from children of low curiosity in their social adjustment and responsibility?
3. Do the parents of high-curiosity children differ from the parents of low-curiosity children in their child-rearing attitudes?

These broad questions generated eighteen specific hypotheses. They were used as a basis for selecting the instruments and directing the procedures used in the investigation. They are also used later in the present chapter as guides for summarizing the results, and are listed there.

Assumptions of Study

In order to test the hypotheses generated for this investigation, it was necessary to assume that:

1. it was possible to identify groups of children varying in degrees of curiosity,
2. it was feasible to measure the differences between groups differing in curiosity on the personal and social variables as stated in the hypotheses.

This second assumption suggested that measuring instruments could either be found or developed for this purpose.

It was not assumed that a causal relationship exists between given variables and curiosity. Although a high correlation between a variable and curiosity could indicate causation, an etiological relationship cannot be claimed, or even suggested, without further empirical study.

Definition of Curiosity

Since the concept of curiosity is ill defined, it was essential to clarify its meaning for the present investigation. In addition, since judgments of curiosity were to be made in terms of the behavior of children, it was necessary that this definition be stated in such a manner that judges could observe precise actions purported to indicate curiosity.

Several steps were taken to develop such a definition. These are described in detail in an earlier report and are not discussed here

(138: 25-31). The steps included informal inquiries, formal inquiries, review of dictionary definitions, an examination of the historical development of the meaning of the word, and a survey of the literature.

On the basis of this information, it was concluded that curiosity is demonstrated by an elementary child when he:

1. reacts positively to new, strange, incongruous, or mysterious elements in his environment by moving toward them by exploring them or by manipulating them,
2. exhibits a need or a desire to know more about himself and/or his environment,
3. scans his surroundings seeking new experiences,
4. persists in examining and exploring stimuli in order to know more about them.

Importance of Study

A careful review of the literature indicated a dearth of information regarding curiosity of elementary school children. This, of itself, should be sufficient reason for studying curiosity more intensively.

In addition, some claims have been made that curiosity is important in creativity, problem solving, and some types of learning. If these relationships do exist, the more knowledge available that pertains to curiosity the more one should know about these other cognitive functions.

Finally, the results of an earlier study indicated that high-curiosity children as compared to low-curiosity children are those who:

1. ask more and better questions,
2. select more outgoing, adventurous, investigatory activities,
3. have more general information about the world in which they live,
4. can recall more specific facts of an unusual nature,
5. react more positively to the unbalanced and unfamiliar,
6. persist longer at problem solving, and
7. are more alert to verbal absurdities.

It seems, therefore, that it is important to extend this list and to eventually apply these findings to educational practices.

Limitations of Study

There were two major types of limitations which have to be considered when reading the results of this investigation. First, there were limitations similar in nature to those found in other studies. Secondly, there were those specific to the present study.

The study was limited to children attending fifth-grades in selected public schools in New Castle County, Delaware. Since special classes are provided for the educable and trainable, there were no children in the study with IQ's low enough to be admitted to the special classes. The mean IQ of all the children was 112.01.

The sample included only children for whom complete data were obtained. This group included 217 girls with a mean IQ of 114.59 and 224 boys with a mean IQ of 110.12.

In general, the children in the sample were from middle-class suburban families. No children lived in predominantly less-chance, deprived areas. Very few came from upper-class families.

Another limitation to this study was a resistance to the testing program itself that was expressed by a small but vocal group. The opposition was to all testing in general and not specifically to the present research study. The protests were similar to those made to halt testing programs that were being carried out in other areas of the United States.

The directors of the present study met with groups of parents, professional people, teachers, and administrators and discussed the nature of the present research. As a result, most schools continued in the project.

Due to the controversy, however, it seemed unwise to retain some of the instruments examined in the preliminary study. It was also deemed inappropriate to interview parents as originally planned.

The extent that this controversy limited the value of the results, of course, is unknown. It must, however, be taken into account when they are examined.

Review of Literature

Since the literature pertaining to curiosity has been reported adequately elsewhere (15, 138, 198), it was not reviewed in this report. Instead, a sample of literature pertaining to personal and social variables in the behavior of elementary school children was examined. The purpose of this review was to show the bases for deriving the hypotheses to be tested and to clarify the nature of the problems underlying the hypotheses.

The review is divided into three major parts as follows:

1. Personal Variables
2. Social Variables
3. Home and Family Variables

This division, however, was to some extent arbitrary. It is difficult to draw sharp lines of demarcation between interpersonal and intrapersonal variables. Under which heading they finally were discussed depended more upon degree of emphasis than upon real differences.

Personal variables. -- The literature pertaining to such personal variables as the self, anxiety and security, moral and ethical values, thought processes, interests and needs was sampled and reviewed. In addition, empirical and theoretical statements regarding overall maturity and emotional balance were examined.

The literature revealed a wide diversity of meaning for each of the terms. This multiplicity tended in many ways to limit the precision of thinking necessary in developing testable and meaningful hypotheses.

For example, although the self has been considered for a long time, there appears to be confusion as to its exact meaning. The personality theory of Maslow seemed to parallel the thinking of the present investigators.

The same lack of precision of definition was apparent when studies of anxiety were reviewed. Here the problem seemed to be a matter of deciding the point between anxiety and nonanxiety. Is it anxiety when one is in doubt about the outcome of a simple problem or must the feeling be overwhelming and debilitating? The present study is predicated on the assumption that a little anxiety is necessary for curiosity to function; too much would destroy it.

A review of the literature indicates that intense anxiety curtails curiosity by limiting risk taking. The anxious child will not move out from the *status quo*. Such unwillingness to take risks is also reflected in the quality and quantity of thought processes and in the nature of the child's interests.

A further examination of the literature indicates that in some way the child's self concept and his ethical and moral values are related. Perhaps these values function in a global manner. Some of the literature that was studied tends to show that emotional balance and maturity are in general conducive to the manifestation of curiosity. These, too, seem to operate in a global fashion.

Social variables. -- Studies and reports bearing on social variables were grouped under three headings - social prejudice, social skills and participation, and overall social adjustment. This small number of categories was due, in part, to the difficulty of separating personal and social variables discussed above, and to the simple fact that much of the child's social life involves his family and his home. The literature pertaining to these latter variables is discussed separately.

The literature on social prejudice seemed to show that prejudice limits curiosity. In part, this might be due to the limitations such feelings place upon social participation.

Friendliness, cooperation, social flexibility, and curiosity all require a reaching out on the part of the whole person. Most writers indicated that this behavior is of paramount importance in overall social adjustment.

The survey of the literature showed that many writers saw a probable relationship between effective social functioning and the behavior ordinarily thought of as revealing curiosity. Responsibility, social maturity, freedom, friendliness, cooperation and social flexibility seemed to be logically a part of the behavior patterns of high-curiosity children.

Home and family variables. -- Studies pertaining both to the child's attitude toward his family and to the family's attitude toward him were reviewed. These reviews indicated that the child obtains many of his values from his family. These values, in turn, were reflected in his behavior.

Much of the child's behavior seemed to be related to parental attitudes such as permissiveness, democratic attitudes, and recognition of the child's needs and individuality. It seemed essential that the attitudes of parents be examined in terms of the level of curiosity manifested by their children.

Procedures of Study

The present study was carried out in three major stages. These included the selection of criterion groups, the selection of measuring instruments, and the administration and analysis of tests.

Selection of criterion groups. -- In order to ascertain whether groups of children high in curiosity differ from groups of children low in curiosity on the several personal and social variables on which they were hypothesized to differ, it was first necessary to identify criterion groups. Three steps were taken. First, curiosity was defined in terms of children's behavior. Secondly, this behavior was rated by several judges in terms of the definition. Finally, variables that might influence such judgments were studied and taken into account.

Two groups of judgments were used to identify children whose curiosity differed according to the definition. These were made by the children's teachers and the children's peers. Two types of rating instruments were developed to aid the teachers and children in making their evaluations. Each instrument was constructed to include all aspects of the definition of curiosity as used in this study.

Each teacher was given the definition of curiosity together with an illustration of children's behavior for each part of it. The teacher was told that all of the kinds of behavior included might not be observable in any one child, but that it was reasonable to suppose that the more of them a child showed, the more curious he was. The teacher was also cautioned that the child who showed the most curiosity might not be the one who was making the best classroom adjustment.

After being given these directions, each teacher was asked to rate the pupils in his class. This was done by first selecting the child considered to have the most curiosity, then the child considered to have the least curiosity, and continuing this process until all of the children were placed.

In an earlier study, two rankings were made separated by a period of eight weeks. The average of the reliability estimates obtained was .77.

This procedure was not appropriate for the children to use to evaluate their peers. Therefore, an instrument called the Who-Should-Play-the-Part test was created. The children were given the descriptions of eight roles -- four of children whose behavior was an example of high curiosity and four whose behavior was an example of low curiosity. The raters were told to select children in their classrooms who were generally most like the characters required for the play.

In order to obtain an estimate of reliability for this instrument, several classes used in earlier investigations were divided into two equal parts. The children were ranked according to the ratings each received from each half of the class and rank order correlations were calculated for each class. The mean correlation coefficient was .54.

Earlier studies had shown that these judgments were not unduly influenced by age, popularity, race, or sex. There was a moderate positive correlation between intelligence and both peer and teacher ratings.

Further analysis of tests and other instruments revealed that there might be a sex bias operating. This seemed to be particularly true in the case of some of the personality tests.

Therefore, it seemed advisable to take both sex and intelligence into account when selecting criterion groups. To do this, the following steps were taken after the children had been identified by their teachers and peers:

1. The children were divided into groups by sex.
2. The peer judgments made of each sex group were correlated with intelligence.
3. This procedure was repeated with teacher judgments.
4. The regression equations for peer judgment on intelligence and for teacher judgment on intelligence were calculated for both boys and girls.
5. Groups of girls and groups of boys whose scores differed from the regression line by at least ±1 standard error on both teacher and peer judgment were selected.

6. Children who had scores differing by ±½ standard error from the regression lines on both judgments were added to form what is called the consistent curiosity groups.
7. Other children whose scores differed by ±1 standard error from the regression lines for either peer judgment or teacher judgment and less than ±½ standard error on the other were added to form the total criterion groups.

The three groups are referred to in this report as the extreme, consistent, and total curiosity groups. The first, the extreme groups, included 15 high-curiosity boys and 16 high-curiosity girls; 14 low-curiosity boys and 12 low-curiosity girls. The consistent groups were composed of 50 high-curiosity boys and 37 high-curiosity girls; 40 low-curiosity boys and 30 low-curiosity girls. The total groups were made up of 60 high-curiosity boys and 50 high-curiosity girls; 49 low-curiosity boys and 41 low-curiosity girls.

The analyses for all three groups were reported. Precautions were taken to avoid the error of claiming a greater number of significant findings than were justified.

Selection of measuring instruments. -- Several types of measuring instruments were used in this study. These included measures of personal and social adjustment, measures of parental attitudes, and instruments used to determine criterion groups. The latter are described above.

In all cases, paper-and-pencil scales and rating devices were used. They are more manageable and less time consuming than individual interviews and seem to be almost as effective for some variables.

Many of the instruments were purchased from publishers of tests. Some of these were constructed in such a way that several variables could be measured with a single instrument. Other devices measured single variables. Most of these had been developed and used by other researchers in their particular studies. In one case, a testing instrument, the social distance scale, was modified for use in the present investigation.

Among the instruments from which several scores were obtained were *The California Test of Personality*, *The Behavior Preference Record*, *The Children's Personality Questionnaire*, and *The Institute of Child Study Security Test*. Devices used to measure a single variable included the *Cassel Group Level of Aspiration Test*, a social attitudes scale, a social distance scale, a descriptive word test to measure morality, a Word Association Test and a Uses of Things test to measure creativity, the *Children's Manifest Anxiety Scale*, the *General Anxiety Scale for Children*, the Children's Antidemocratic Attitude Scale, an intolerance of ambiguity test, and a test to measure conceptual systems.

In order to obtain information on parental attitudes, the Parental Attitude Research Instrument, the PARI, was sent to parents of selected children. One instrument was sent to fathers; another was sent to mothers.

The administration of the instruments. -- All of the instruments, except those sent to the parents, were administered to 577 children in 19 fifth-grade classrooms in public elementary schools in New Castle County, Delaware. They were administered to all of the children in these classrooms because it would have created too much disturbance to remove special groups for testing.

The instruments were administered and scored by the principal investigator, the co-investigator or their assistants. Special instructions were given for the administration of each test and for its scoring prior to its administration.

The PARI was used as a questionnaire and was sent to the fathers and mothers of 200 randomly selected children. Both fathers and mothers of 111 of these children returned their forms.

Findings of the Study

The findings of this investigation, are reported under three somewhat overlapping rubrics. First, the findings are stated in terms of the hypotheses generated for the study. Secondly, the information obtained to answer the major questions is reported. Finally, the characteristics of high-curiosity children as ascertained by this investigation are listed.

Hypotheses. -- Eighteen hypotheses were generated for this investigation. Each is stated below followed by a statement regarding whether it can be accepted on the basis of evidence derived from this investigation.

1. High-curiosity children are more self-accepting than are low-curiosity children. This hypothesis can be accepted in the case of boys. There is only a tendency in this direction in the case of girls.

2. High-curiosity children are more self-sufficient than are low-curiosity children. The evidence supports this hypothesis to a limited extent for both boys and girls.

3. High-curiosity children have a higher level of aspiration than have low-curiosity children. There is some evidence that this is true for girls but no evidence that it is true for boys.

4. High-curiosity children are more free from hindering anxieties and self doubts than are low curiosity children. The results of the investigation are somewhat contradictory. It appears, however, that high-curiosity children of both sexes feel more secure than do low-curiosity boys and girls.

5. High-curiosity children are more organized in their thought processes than are low-curiosity children. This investigation indicates that high-curiosity boys are less shrewd or sophisticated, more creative and flexible and more consistent in their thought processes than low-curiosity boys. It also reveals that high-curiosity girls are more creative and flexible and more consistent in their thought processes than low-curiosity girls.

6. High-curiosity children are more tolerant of ambiguity than are low-curiosity children. The data from this investigation do not support this hypothesis for either sex.

7. High-curiosity children hold a more balanced point of view in relation to moral values than do low-curiosity children. In some areas such as dependability, being a square shooter, and group loyalty, this hypothesis is supported for both boys and girls. There is also a tendency for high-curiosity girls to show a higher degree of responsibility than low-curiosity girls.

8. High-curiosity children have reached a higher level of emotional maturity than have low-curiosity children. The data support this hypothesis for boys; do not support it for girls.

9. High-curiosity children are more free from social prejudice than are low-curiosity children. The hypothesis is well supported in the case of the boys. It is not supported in the case of the girls.

10. High-curiosity children exhibit a more healthy participation in group activities than do low-curiosity children. The data tend to support this hypothesis both for boys and girls. There are differences, however, in the nature of the participation on the part of the two sexes.

11. High-curiosity children show a higher level of social skill than do low-curiosity children. This was shown to be true for boys. There were no significant differences between high- and low-curiosity girls in social skills.

12. High-curiosity children are more responsible for group welfare than are low-curiosity children. This hypothesis may be accepted for both boys and girls on the basis of the evidence.

13. High-curiosity children show better overall social adjustment than do low-curiosity children. There is strong evidence in favor of this hypothesis for boys and some evidence in favor of it for girls.

14. High-curiosity children feel that their discipline is more fair than do low-curiosity children. If this hypothesis can be interpreted to include attitudes toward family relations, it is partially supported in the case of boys. It is unsupported in the case of girls.

15. High-curiosity children are better in their overall adjustment than are low-curiosity children. This is strongly supported as far as boys are concerned; not supported as far as girls are concerned.

16. Parents of high-curiosity children are more accepting of their children's behavior than are parents of low-curiosity children. The results of the study indicate that this hypothesis may be accepted for boys but not for girls.

17. Parents of high-curiosity children are more likely to reward and encourage information seeking and exploratory behavior than are parents of low-curiosity children. There is considerable evidence for this hypothesis as far as boys are concerned. There is none to support it for girls.

18. Parents of high-curiosity children are more democratic in their child-rearing practices than are parents of low-curiosity children. The evidence supports this hypothesis for boys but not for girls.

Questions. -- In the light of these findings the first two questions raised at the beginning of this chapter can be answered in the affirmative. However, the evidence is more clear in the case of boys than in the case of girls. This may mean that girls who differ in their curiosity levels do not differ as much as boys do on other personal and social variables. It may also mean that the criteria used to select groups differing in curiosity may be more effective for boys than for girls. Whatever the case may be, the evidence from this investigation gives affirmative answers to all three questions as far as boys are concerned, but gives weaker affirmative answers to the first two and a negative answer to the third as far as girls are concerned.

Characteristics of children with high curiosity. -- Earlier in this chapter, seven characteristics of high-curiosity children identified in earlier studies were reported. To this list must be added the characteristics found in the present study. It can be said on the basis of data obtained in this investigation that:

1. High-curiosity boys differ from high-curiosity girls on many personal and social variables.

2. High-curiosity children have a higher level of self-acceptance than low-curiosity children.

3. High-curiosity children seem to be more self-sufficient than low-curiosity children.

4. High-curiosity girls have a higher level of aspiration than have low-curiosity girls.

5. High-curiosity children tend to feel more secure than low-curiosity children.

6. High-curiosity children tend to be more creative, flexible, and consistent in their thought processes than low-curiosity children.

7. High-curiosity children tend to be more dependable than low-curiosity children.

8. High-curiosity children are more often identified as "square shooters" than are low-curiosity children.

9. High-curiosity children tend to show a higher level of group loyalty than low-curiosity children.

10. High-curiosity girls show a higher degree of responsibility than is shown by low-curiosity girls.

11. High-curiosity boys show a higher level of emotional maturity than is shown by low-curiosity boys.

12. High-curiosity boys are more free from social prejudice than are low-curiosity boys.

13. High-curiosity children exhibit a more healthy participation in group activities than low-curiosity children.

14. High-curiosity boys show a higher level of social skill than do low-curiosity boys.

15. High-curiosity children are more responsible for group welfare than are low-curiosity children.

16. High-curiosity children show better overall social adjustment than do low-curiosity children.

17. High-curiosity boys feel that their discipline is more fair than do low-curiosity boys.

18. High-curiosity boys are better in their overall adjustment than are low-curiosity boys.

Future Studies

After studying the results of the present investigation, it is at once apparent that there is much more to be known about the nature of children's curiosity than has been learned to date. It is for this reason that studies that have been suggested by this research are presented. This list is not exhaustive nor is it so intended. The reader as he questions and criticizes the techniques and findings of this study will add to this list.

Among the future studies that should be carried out in the area of children's curiosity are the following:

1. The present investigation should be replicated with a similar sample of children.

2. A similar investigation should be conducted at other grade levels.

3. A similar investigation should be carried out with children of different socio-economic backgrounds.

4. The present investigation should be repeated with different ethnic, religious, and racial groups.

5. The present investigation should be replicated with children with special problems, e.g. mentally retarded, superior, physically handicapped, hard of hearing, deaf, poor visioned, blind, and emotionally handicapped.

6. The knowledge obtained about curiosity should be integrated into courses and curricula of elementary schools.

7. The reason for the apparent differences between boys and girls on the personal and social variables differentiating children high and low in curiosity should be investigated.

8. More information needs to be obtained regarding how personal and social variables operate in the curiosity levels of children residing in other cultures.

9. Genetic studies should be undertaken to determine what, if any, changes occur in curiosity and the personal and social variables studied from nursery school through college.

10. The relationships among intelligence, curiosity, and creativity should be studied.

11. The discrepant finding of significant relationships between parents' attitudes and children's curiosity in the case of boys and no relationship in the case of girls needs further investigation.

12. A theory of curiosity in the elementary school child needs to be developed. Such a theory should utilize information secured in many studies of curiosity, but should not be bound to such data. The theory should give a meaningful description of curiosity, but above all it should raise many questions requiring answers. In other words, it should stimulate further research into children's curiosity.

BIBLIOGRAPHY

1. Abelson, R. P. and Lesser, G. S. A developmental theory of persuasibility, pp. 167-186. In Hovland, C. I. and Janis, I. L. (eds.), *Personality and Persuasibility*. New Haven: Yale University Press, 1959.

2. Adorno, T. W. *et al*. *The Authoritarian Personality*. New York: Harper and Brothers, 1950.

3. Aldous, Joan and Kell, Leone. Child-rearing values of mothers in relation to their children's perceptions of their mothers' control: an exploratory study. *Marriage and Family Living*, 1956, 18, 72-74.

4. Allport, G. W. Comment on earlier chapters, pp. 94-99. In May, R. (ed). *Existential Psychology*. New York: Random House, 1961.

5. __________. The psychology of participation. *Psychological Review*, 1945, 52, 117-132.

6. Almy, Millie. *Child Development*. New York: Henry Holt and Company, 1955.

7. Alpert, B. and Smith, Patricia A. How participation works. *Journal of Social Issues*, 1949, 5, 3-13.

8. Ausubel, D. P. *et al*. Qualitative characteristics in the learning process associated with anxiety. *Journal of Abnormal and Social Psychology*, 1953, 48, 537-542.

9. Baker, H. *Introduction to Exceptional Children*, pp. 479-80. New York: The Macmillan Company, 1945.

10. Barron, F. *Creativity and Psychological Health: Origins of Personal Vitality and Creative Freedom.* Princeton: D. Von Nostrand Company, 1963.

11. Bergman, P. Neurotic anxieties in children and their prevention. *Nervous Child*, 1946, 5, 37-55.

12. Berlyne, D. E. A theory of human curiosity. *British Journal of Psychology*, 1954, 45, 180-191.

13. ________________. Complexity and incongruity variables as determinants of exploratory choice and evaluative ratings. *Canadian Journal of Psychology*, 1963, 17, 274-290.

14. ________________. Conflict and information-theory variables as determinants of human perceptual curiosity. *Journal of Experimental Psychology*, 1957, 53, 399-404.

15. ________________. *Conflict Arousal and Curiosity*. New York: McGraw-Hill Book Company, 1960.

16. ________________. The influence of complexity and novelty in visual figures on orienting responses. *Journal of Experimental Psychology*, 1958, 55, 289-296.

17. ________________. The motivational significance of novelty. Unpublished paper written for *New Society*, 1963.

18. ________________. Uncertainty and conflict: a point of contact between information-theory and behavior-theory conflicts. *Psychological Review*, 1957, 64, 329-339.

19. Beverly, B. I. Anxieties of children: their causes and implications. *American Journal of Disturbed Children*, 1942, 64, 585-593.

20. Block, J. and Block, Jeanne. An investigation of the relationship of ambiguity and ethnocentrism. *Journal of Personality*, 1951, 19, 303-311.

21. Blum, A. The relationship between rigidity-flexibility in children and their parents. *Child Development*, 1959, 30, 297-304.

22. Boehm, L. and Nass, M. L. Social class differences in conscience development. *Child Development*, 1962, 33, 565-574.

23. Bogardus, E. S. *The New Social Research*, pp. 212-213. Los Angeles: Jesse Ray Miller, 1926.

24. Bonney, M. E. Popular and unpopular children: a sociometric study. *Sociometry Monographs*, 1947, 9, 30.

25. Bonthius, R. H. *Christian Paths of Self Acceptance*. New York: King's Crown Press, 1948.

26. Bornstein, Berta. Emotional barriers in the understanding and treatment of young children. *American Journal of Orthopsychiatry*, 1948, 18, 691-697.

27. Boynton, P. L. and Wang, J. D. Relation of the play interests of children to their economic status. *Journal of Genetic Psychology*, 1944, 64, 129-138.

28. Brim, O. C. and Hoff, D. B. Individual and situational differences in desire for certainty. *Journal of Abnormal and Social Psychology*, 1957, 54, 225-233.

29. Bromberg, W. Emotional immaturity and antisocial behavior. *Journal of Clinical Psychopathology*, 1947, 8, 423-452.

30. Bruner, J. S. The conditions of creativity, pp. 1-30. In Gruber, H. E. *et al.* (eds.), *Contemporary Approaches to Creative Thinking*. New York: Atherton Press, 1962.

31. Bruner, J. S. *et al.* *A Study of Thinking*. New York: John Wiley and Sons, 1957.

32. Buytendijk, F. J. J. Experienced freedom and moral freedom in the child's consciousness. *Educational Theory*, 1953, 3, 1-13.

33. Cameron, N. *The Psychology of Behavior Disorders*. Boston: Houghton-Mifflin and Company, 1947.

34. Carr, R. M. and Williams, C. D. Exploratory behavior of three strains of rats. *Journal of Comparative and Physiological Psychology*, 1957, 50, 258-263.

35. Cassel, R. N. *The Cassel Group Level of Aspiration Test.* Beverly Hills, California: Western Psychological Services, 1957.

36. Castaneda, A. *et al.* The Children's form of the Manifest Anxiety Scale. *Child Development*, 1956, 27, 317-326.

37. Cattell, R. B. *Personality: A Systematic, Theoretical, and Factual Study*. New York: McGraw-Hill Book Company, 1950.

38. ________________. The nature and measurement of anxiety. *Scientific American*, March, 1963, 208, 96-104.

39. Cattell, R. B. and Scheier, I. H. *The Meaning and Measurement of Neuroticism and Anxiety*. New York: Ronald Press, 1961.

40. Chodorkoff, B. Self-perception, perceptual defense, and adjustment. *Journal of Abnormal and Social Psychology*, 1956, 52, 358-363.

41. Clark, K. B. Race prejudice and children. *Children*, 1953, 17, 113-115.

42. Cohen, L. D. Level of aspiration behavior and feelings of adequacy and self-acceptance. *Journal of Abnormal and Social Psychology*, 1954, 49, 84-86.

43. Connor, Ruth, *et al*. Agreement of family members conceptions of "good" parent and child roles. *Social Forces*, 1958, 36, 353-358.

44. Cowen, E. L., *et al*. The effects of mild frustration and the expression of prejudiced attitudes. *Journal of Abnormal and Social Psychology*, 1958, 58, 33-38.

45. Cowley, W. B. Jabberwocky versus maturity, pp. 342-350. In Williamson, E. G. (ed.), *Trends in Student Social Work*. Minneapolis: University of Minnesota Press, 1949.

46. Cox, F. N. and Leaper, Patricia M. Assessing some aspects of the parent-child relationship. *Child Development*, 1961, 32, 637-649.

47. Crandall, V. J. *et al*. Maternal reactions and the development of independence and achievement behavior in young children. *Child Development*, 1960, 31, 243-251.

48. Crane, A. R. The development of moral values in children: IV pre-adolescent gangs and the moral development of children. *British Journal of Educational Psychology*, 1958, 28, 201-208.

49. Crutchfield, R. S. Conformity and character. *American Psychologist*, 1955, 10, 191-198.

50. Cummings, J. D. The incidence of emotional symptoms in school children. *British Journal of Educational Psychology*, 1944, 14, 151-161.

51. Dalton, R. H. *Personality and Social Interaction*. Boston: D. C. Heath and Company, 1961.

52. Davids, A. and Parenti, Anita Negrin. Personality, social choice, and adult's perception of these factors in groups of disturbed and normal children. *Sociometry*, 1958, 21, 212-224.

53. Davis, E. A. The form and function of children's questions. *Child Development*, 1932, 3, 57-74.

54. Dentler, R. A. and Mackler, B. Originality: some social and personal determinants. *Behavioral Science*, 1964, 9, 1-7.

55. Dettering, R. The learning of symbolic behavior and its importance to education. *ETC: A Review of General Semantics*, Autumn, 1956, 14, 23-37.

56. Dittes, J. E. Attractiveness of group as function of self-esteem and acceptance by group. *Journal of Abnormal and Social Psychology*, 1959, 59, 77-82.

57. *Ecclesiasticus*, III, 23.

58. English, H. B. and English, Ava C. *A Comprehensive Dictionary of Psychological and Psychoanalytical Terms*. New York: David McKay Company, 1958.

59. Erickson, E. H. *Childhood and Society*. New York: W. W. Norton and Company, 1950.

60. Evans, M. Catherine. Social adjustment and interest scores of introverts and extroverts. *Educational and Psychological Measurements*, 1947, 7, 157-167.

61. Fahey, G. L. and Corey, S. M. Inferring level of mental activity from pupils' classroom questions. *Journal of Educational Research*, 1941, 35, 193-200.

62. Feldhusen, J. F. and Thurston, J. R. Personality adjustment of high-and low-anxious children. *Journal of Educational Research*, 1964, 57, 263-267.

63. Fey, W. H. Acceptance by others and its relation to acceptance of self and others: a reevaluation. *Journal of Abnormal and Social Psychology*, 1955, 50, 274-276.

64. Foshay, A. W. and Green, J. H. The development of social processes. *Review of Educational Research*, 1953, 23, 146-150.

65. Foster, J. C. Play activities of children in the first six grades. *Child Development*, 1930, 1, 248-254.

66. Frenkel-Brunswik, Else. A study of prejudice in children. *Human Relations*, 1948, 1, 295-360.

67. ________________. Patterns of social and cognitive outlook in children and parents. *American Journal of Orthopsychiatry*, 1951, 21, 543-558.

68. Freud, S. Analysis of a phobia in a five-year-old boy. pp. 149-288. *Sigmund Freud: Collected Papers, Vol. III.* New York: Basic Books, 1959.

69. ________________. *Inhibitions, Symptoms, and Anxiety*. London: Hogarth Press, 1949.

70. ____________________. The Ego and the Id. International Psychoanalytical Library, London: The Hogarth Press, 1927.

71. ____________________. The Unconscious, pp. 98-136. Sigmund Freud Collected Papers, Vol. IV. New York: Basic Books, 1959.

72. Fromm, E. Selfishness, self-love, and self-interest, pp. 58-69. In Moustakas, C. E. (ed). The Self: Explorations in Personal Growth. New York: Harper and Brothers, 1956.

73. Fuller, J. L. Motivation: A Biological Perspective. New York: Random House, 1962.

74. Gatto, F. M. Pupils' questions - their nature and their relationship to the study process. University of Pittsburgh Bulletin, 1929, 26, 65-71.

75. Gersham, H. The problem of anxiety. American Journal of Psychoanalysis, 1950, 10, 89-91.

76. Getzels, J. W. and Jackson, P. W. Creativity and Intelligence: Explorations with Gifted Students. New York: John Wiley and Sons, 1962.

77. Glaser, E. M. An Experiment in the Development of Critical Thinking. New York: Bureau of Publications, Teachers College, Columbia University, 1941.

78. Goertzel, V. and Goertzel, Mildred. Cradles of Eminence. Boston: Little, Brown and Company, 1962.

79. Gough, H. G. The problem of creativity. A talk given at the Second Annual Financial Management Seminar, University of California, Berkeley, January 29, 1962.

80. Gough, H. G. et al. Children's ethnic attitudes: I Relationship to certain personality factors. Child Development, 1950, 21, 83-91.

81. Grapko, M. Institute of Child Study Security Test. Toronto: University of Toronto Institute of Child Study, 1957.

82. Guilford, J. P. Creativity. American Psychologist, 1950, 5, 444.

83. Guilford, J. P. et al. A Factor Analytic Study of Creative Thinking. Report Psychological Laboratory No. 8. Los Angeles: University of Southern California, 1952.

84. Hall, C. A. and Lindzey, G. *Theories of Personality*. New York: John Wiley and Sons, 1957.

85. Harris, D. B. A scale for measuring attitudes of social responsibility in children. *Journal of Abnormal and Social Psychology*, 1957, 54, 322-326.

86. Harris, D. B. *et al*. Children's ethnic attitudes: II Relationship to parental beliefs concerning child training. *Child Development*, 1950, 21, 169-181.

87. ____________________. Personality differences between responsible and less responsible children. *Journal of Genetic Psychology*, 1955, 37, 103-109.

88. ____________________. The relationship of children's home duties to an attitude of responsibility. *Child Development*, 1954, 25, 29-33.

89. Hart, I. Maternal child-rearing practices and authoritarian ideology. *Journal of Abnormal and Social Psychology*, 1957, 55, 232-237.

90. Hartley, E. L. *Problems in Prejudice*. New York: King's Crown Press, 1946.

91. Hasbrouch, P. D. Enquiring eddies. *Progressive Education*, 1935, 12, 267-269.

92. Havighurst, R. J. Education for a free world society. *American Journal of Orthopsychiatry*, 1949, 19, 578-584.

93. Hemming, J. Symposium: The development of children's moral values. I. Some aspects of moral development in a changing society. *British Journal of Educational Psychology*, 1957, 27, 77-88.

94. Henry, A. F. Sibling structure and perception of the disciplinary roles of parents. *Sociometry*, 1957, 20, 67-74.

95. Hewitt, H. and Gildea, M. C. L. An experiment in group psychotherapy. *American Journal of Orthopsychiatry*. 1945, 15, 112-127.

96. Heynes, R. W. Social psychology and group processes, pp. 419-452. In Farnsworth, P. S. and McNemar, Q. (eds.). *Annual Review of Psychology*, *Vol. IX.* Palo Alto, California: Annual Review, 1958.

97. Hilgard, E. R. Success in relation to level of aspiration. School and Society, 1942, 55, 423-428.

98. Horney, Karen. New Ways in Psychoanalysis. New York: W. W. Norton and Company, 1939.

99. __________. The search for glory, pp. 220-231. In Moustakas, C. E. (ed.). The Self: Explorations in Personal Growth. New York: Harper and Brothers, 1956.

100. Hunt, D. E. Manual for judging free responses from situational interpretation experiment. Unpublished material of author, 1961.

101. Jackson, J. The relative effectiveness of paper-pencil test, interviews, and ratings as techniques of personality evaluation. Journal of Social Psychology, 1946, 23, 35-54.

102. James, W. The Principles of Psychology, Vol. I. New York: Henry Holt and Company, 1890.

103. Johnson, R. C. A study of children's moral judgment. Child Development, 1962, 33, 327-354.

104. Josselyn, Irene M. The Happy Child. New York: Random House, 1955.

105. Jung, C. G. Psychological Types. New York: Harcourt, Brace and Company, 1923.

106. __________, The development of personality, pp. 147-159. In Moustakas, C. E. (ed.). The Self: Explorations in Personal Growth. New York: Harper and Brothers, 1956.

107. Kanner, L. The role of the school in the treatment of rejected children. The Nervous Child, 1944, 3, 236-248.

108. Katz, M. E. A hypothesis on anti-Negro prejudice. American Journal of Sociology, 1947, 53, 100-104.

109. Kinney, Elva E. A study of peer group social acceptability at the fifth grade level in a public school. Journal of Educational Research, 1953, 47, 57-64.

110. Koffka, K. Principals of Gestalt Psychology. New York: Harcourt, Brace and Company, 1935.

111. Kohn, M. L. and Clausen, J. A. Parental authority behavior and schizophrenia. American Journal of Orthopsychiatry, 1956, 26, 297-313.

112. Kutner, B. Patterns of mental functioning associated with prejudice in children. Psychological Monographs, 1958, 72, 48.

113. Landis, P. H. The ordering and forbidding technique and teenage adjustment. School and Society, 1954, 80, 105-106.

114. Landreth, Catherine and Johnson, Barbara Child. Young children's responses to a picture and inset test designed to reveal reactions to persons of different skin color. Child Development, 1953, 24, 63-80.

115. Langford, Louise M. and Alm, O. W. A comparison of parent judgments and child feelings concerning the self-adjustment and social adjustment of twelve-year-old children. Journal of Genetic Psychology, 1954, 85, 39-46.

116. Leather, N. T. Level of aspiration and achievement imagery. Australian Journal of Psychology, 1958, 10, 319-328.

117. Lehman, H. C. and Witty, P. A. The Psychology of Play Activities. New York: A. S. Barnes and Company, 1927.

118. Levin, H. and Sears, R. R. Identification with parents as a determinant of doll play aggression. Child Development, 1956, 27, 135-155.

119. Levitt, E. E. Studies in intolerance of ambiguity: I. The decision location test with grade school children. Child Development, 1953, 24, 263-268.

120. Lindemann, E. and Greer, Ina M. Emotional maturity. Journal of Pastoral Care, 1949, 3, 1-11.

121. Lipsett, L. P. A self-concept scale and its relationship to the children's form of the Manifest Anxiety Scale. Child Development, 1958, 29, 463-472.

122. Little, S. The function of a child guidance clinic in a children's hospital. New York State Journal of Medicine, 1948, 48, 2379-2381.

123. Lowry, S. Co-operation, Tolerance, and Prejudice: a Contribution to Social and Medical Psychology, London: Routledge and Kegan Paul, 1948.

124. MacKinnon, D. W. The nature and nurture of creative talent. The American Psychologist, 1962, 17, 484-495.

125. Mahone, C. H. Fear of failure and unrealistic vocational aspirations. Journal of Abnormal and Social Psychology, 1960, 60, 253-261.

126. Mandler, G. and Sarason, S. B. The effect of prior experience and subjective failure on the evocation of test anxiety. Journal of Personality, 1953, 21, 337-341.

127. Marks, Rose W. The effect of probability, desirability, and "privilege" on the stated expectations of children. Journal of Personality, 1951, 19, 332-351.

128. Marshall, Helen R. and McCandless, B. R. Relationships between dependence on adults and social acceptance by peers. Child Development, 1957, 28, 413-419.

129. Maslow, A. H. A theory of human motivation. Psychological Review, 1943, 18, 401-411.

130. ____________. "Higher" and "lower" needs. Journal of Psychology, 1948, 25, 433-436.

131. ____________. Motivation and Personality. New York: Harper and Brothers, 1954.

132. ____________. Self-actualizing people: a study of psychological health, pp. 160-194. In Moustakas, C. D. (ed.) The Self: Explorations in Personal Growth. New York: Harper and Brothers, 1956.

133. Mason, Beverly Derkson, Leadership in the fourth grade. Sociology and Social Research, 1952, 36, 239-243.

134. Maw, Ethel W. An experiment in teaching critical thinking in the intermediate grades. Unpublished dissertation submitted for the Ph.D. degree, University of Pennsylvania, 1959.

135. ____________. Teaching critical thinking through reading, pp. 75-87. In Stauffer, R. G. (ed.) Dimensions of Critical Thinking. Newark, Delaware: The University of Delaware, 1964.

136. Maw, W. H. Curiosity, cats, and censors, pp. 119-133. In Stauffer, R. G. (ed.) Dimensions of Critical Thinking. Newark, Delaware: The University of Delaware, 1964.

137. ____________. Curiosity, children, conformity. Address given at the annual meeting of the Kindergarten-Primary Department of the Southwestern Ohio Education Association at Cincinnati on October 23, 1964.

138. Maw, W. H. and Maw, Ethel W. *An Exploratory Investigation into the Measurement of Curiosity in Elementary School Children.* Project 801. Cooperative Research Branch, U. S. Office of Education, Department of Health, Education, and Welfare, 1964.

139. ____________. Children's curiosity as an aspect of reading comprehension. *The Reading Teacher*, 1962, 15, 299-306.

140. ____________. Establishing criteria for evaluating measures of curiosity. *Journal of Experimental Education*, 1961, 29, 299-306.

141. ____________. Information recognition by children with high and low curiosity. *Educational Research Bulletin*, 1961, 40, 197-201.

142. ____________. Nonhomeostatic experiences as stimuli of children with high curiosity. *California Journal of Educational Research*, 1961, 12, 57-61.

143. ____________. Selection of unbalanced and unusual designs by children high in curiosity. *Child Development*, 1962, 33, 917-922.

144. ____________. The differences between the scores of children with high curiosity and children with low curiosity on a test of general information. *Journal of Educational Research*, 1963, 57, 76-79.

145. ____________. The relationship between curiosity and scores on a test of general information. *Journal of the Association for Research in Growth Relationships*, 1960, 2, 27-33.

146. ____________. *The You Test: Form C.* Newark, Delaware: The Authors, 1961.

147. May, R. *The Meaning of Anxiety*. New York: Ronald Press, 1950.

148. McCarthy, Dorothea. Personality and learning. *American Council on Education Studies*, 1949, 13, 93-96.

149. McCreary, J. Child guidance. *Bates College Training School Bulletin*, 1949, 45, 154-163.

150. Medinnus, G. R. Objective responsibility in children: a comparison with the Piaget data. Journal of Genetic Psychology, 1962, 101, 127-133.

151. Moloney, J. C. Maternocentric child rearing. Merrill-Palmer Quarterly, 1957, 3, 54-66.

152. Montagu, M. F. A. Racism and social action. Psychiatry, 1946, 9, 143-150.

153. Montgomery, K. C. and Zimbardo, P. G. Effects of sensory and behavioral deprivation upon exploratory behavior of rats. Perceptual Motor Skills, 1957, 7, 223-229.

154. Morgan, Patricia K. and Gaier, E. L. Types of reactions in punishment situations in the mother-child relationship. Child Development, 1957, 28, 161-166.

155. Morton, J. A. A study of children's mathematical interest questions as a clue to grade placement of arithmetic topics. Journal of Educational Psychology, 1946, 37, 438-439.

156. Mosher, D. L. and Scodel, A. Relationship between ethnocentrism in children and the ethnocentrism and authoritarian rearing practices of their mothers. Child Development, 1960, 31, 369-376.

157. Mummery, Dorothy V. Family background of assertive and non-assertive children. Child Development, 1954, 25, 63-80.

158. Murphy, G. Personality. New York: Harper and Brothers, 1947.

159. Mussen, P. H. et al. Child Development and Personality, Second edition. New York: Harper and Row Publishers, 1963.

160. Muuss, R. E. A comparison of "high causally" and "low causally" oriented sixth grade children in respect to a perceptual "intolerance of ambiguity test", Child Development, 1960, 31, 521-536.

161. ______________. A comparison of "high causally" and "low causally" oriented sixth grade children on personality variables indicative of mental health. The Iowa Academy of Science, 1959, 66, 388-394.

162. Nissen, H. W. A study of exploratory behavior in the white rat by means of the obstruction method. Journal of Genetic Psychology, 1936, 37, 361-374.

163. Nunberg, E. Curiosity. New York: International Universities Press, 1961.

164. O'Connor, Patricia. Ethnocentrism, "intolerance of ambiguity," and abstract reasoning ability. Journal of Abnormal and Social Psychology, 1952, 47, 526-530.

165. Ogden, J. A. and Olson, W. A. The inter-relationships of creativity, curiosity, intelligence, achievement, and emotional maturity. Unpublished report of the findings in a research project submitted in partial fulfillment of the requirements of the Ed. D. degree at Colorado State College, 1961.

166. Olson, W. C. The improvement of human relations in the classroom. Childhood Education, 1946, 22, 317-325.

167. Orr, D. W. Anti-semitism and the psychopathology of everyday life, pp. 85-95. In Simmel, E. Anti-Semitism. New York: International Universities Press, 1946.

168. Patrick, Catherine. Creative thought in artists. Journal of Psychology, 1937, 4, 35-73.

169. Payne, D. E. and Mussen, P H. Parent-child relations and father identification among adolescent boys. Journal of Abnormal and Social Psychology, 1956, 52, 358-363.

170. Pear, T. H. The concept of maturity. Bulletin of the John Rylands Library, Mancester, England, 1944, 28, 404-421.

171. Perrodin, A. F. Factors affecting the development of cooperation in children. Journal of Educational Research, 1960, 53, 285-287.

172. Peterson, D. R. et al. Parental attitudes and child development. Child Development, 1959, 30, 119-130.

173. Phillips, B. N. and DeVault, M. V. Relation of positive and negative sociometric valuations to social and personal adjustment of school children. Journal of Applied Psychology, 1955, 39, 409-412.

174. Piaget, J. The Moral Judgment of the Child. New York: Harcourt, Brace and Company, 1932.

175. Poffenberger, T. A research note on father-child relations and father viewed as a negative figure. Child Development, 1959, 30, 489-492.

176. Poore, Patricia J. and Lang, G. Curiosity in elementary school children: a comparison of parent, teacher, and children's self ratings. Paper presented at the Annual Meeting of the American Psychological Association, Philadelphia, August, 1963.

177. Pope, B. Socio-economic contrasts in children's peer culture prestige values. *Genetic Psychological Monographs*, 1953, 48, 157-220.

178. Porter, R. B. and Cattell, R. B. *Children's Personality Questionnaire*. Champaign, Illinois: The Institute for Personality and Ability Testing, 1960.

179. Radke-Yarrow, Marian J. The relation of parental authority in children's behavior and attitudes. *University of Minnesota Child Welfare Monographs*, 1946, #22.

180. Radke-Yarrow, Marian J. *et al*. Racial attitudes of children. *Sociometry*, 1950, 13, 154-171.

181. ______________. Social perceptions and attitudes of children. *Genetic Psychology Monographs*, 1949, 40, 327-447.

182. Reed, H. B., Jr., Anxiety: the ambivalent variable. *Harvard Educational Review*, Spring, 1960, 30, 141-153.

183. Roe, Anne. The psychology of the scientist. *Science*, 1961, 134, 456-458.

184. Rogers, C. R. Two divergent trends, pp. 85-93. In May, R. (ed.) *Existential Psychology*. New York: Random House, 1961.

185. Rokeach, M. Ethnocentrism and a general mental rigidity factor. *American Psychologist*, 1946, 1, 451.

186. Rokeach, M. and Fruchter, B. A factorial study of dogmatism and related concepts. *Journal of Abnormal and Social Psychology*, 1956, 53, 356-360.

187. Rose, A. M. Reference groups of rural high school youth. *Child Development*, 1956, 27, 351-365.

188. Rosen, B. C. and D'Andrade, R. The psychosocial origins of achievement motivation. *Sociometry*, 1959, 22, 185-218.

189. Russell, D. H. *Children's Thinking*. New York: Ginn and Company, 1956.

190. ______________. What does research say about self-evaluation? *Journal of Educational Research*, 1953, 46, 561-573.

191. Sachs, B. D. *et al.* Human curiosity as a function of information input. Paper read at Annual Meeting of the American Psychological Association, New York City, September 1, 1961.

192. Sanford, Beryl. Some psycho-therapeutic work in maternity and child welfare clinics. *British Journal of Medical Psychology*, 1952, 25, 2-15.

193. Sarason, S. B. *et al.* *Anxiety in Elementary School Children; A Report of Research*. New York: John Wiley and Sons, 1960.

194. Schachtel, E. G. *Metamorphosis*. New York: Basic Books, 1959.

195. Schaefer, E. S. and Bayley, Nancy. Maternal behavior, child behavior, and their inter-correlations for infancy through adolescence. *Monographs of the Society for Research in Child Development*, 1963, 28, 87.

196. Schaefer, E. S. and Bell, R. Q. Development of a parental attitude research instrument. *Child Development*, 1958, 29, 339-361.

197. Schwartz, Lita Linzer. Anxiety, curiosity, and reading achievement, pp. 102-107. In Stauffer, R. G. (ed) *Dimensions of Critical Thinking*. Newark, Delaware: The University of Delaware, 1964.

198. ______________. Relationships among curiosity, anxiety, and risk taking in fifth-grade children. Unpublished dissertation submitted in partial fulfillments of the requirements for the Ph.D. at Bryn Mawr College, 1964.

199. Sears, Pauline. Level-of-aspiration behavior and feeling of adequacy and self-acceptance. *Journal of Abnormal and Social Psychology*, 1954, 49, 84-86.

200. Seeman, J. Toward a concept of personality integration. *American Psychologist*, 1959, 14, 633-637.

201. Shafer, R. A study of thought processes in a word association test. *Character and Personality*, 1945, 13, 212-227.

202. Sherif, M. and Cantril, H. *The Psychology of Ego-Involvements*. New York: John Wiley and Sons, 1947.

203. Shoben, E. J. The assessment of parental attitudes in relation to child adjustment. *Genetic Psychological Monographs*, 1949, 39, 101-148.

204. Siebert, E. Beitrag zur Bestiminung der Interessenrechtung von Schlülern auf Grund von Schülerfragen. *Archii für die Gesante Psychologie*, 1928, 64, 93-124.

205. Smock, C. D. The influence of psychological stress on the "intolerance of ambiguity". *Journal of Abnormal and Social Psychology*, 1955, 50, 177-182.

206. Snygg, D. and Combs, A. W. *Individual Behavior*. New York: Harper and Brothers, 1948.

207. Sonstegard, M. A. Interaction processes and the personality growth of children. *Group Psychotherapy*, 1958, 11, 40-45.

208. Spache, G. The learner's concept of self. *American Council on Education Studies*,,1949, 13, 97-99.

209. Spector, S. I. Climate and social acceptability. *Journal of Educational Sociology*, 1953, 27, 108-114.

210. Springthorpe, G. Some aspects of child development and mental health, Lecture II. *Medical Journal of Australia*, 1947, 1, 717-724.

211. Stock, Dorothy. An investigation into the intercorrelations between the self concept and feelings directed toward other persons and groups. *Journal of Consulting Psychology*, 1949, 13, 176-180.

212. Stott, L. H. and Ball, Rachel Stutsman. Consistency and change in ascendance-submissive in the social interaction of children. *Child Development*, 1957, 28, 259-272.

213. Sugiedelis, A. *Some Adjustment Correlates of the Self and the Ideal Self as Influenced by Perceived Parental Values*. Washington, D. C. Catholic University of American Press, 1957.

214. Sullivan, H. S. *The Meaning of Anxiety in Psychiatry and in Life*. Washington, D. C. The William Alanson White Foundation, 1948.

215. Sutton-Smith, B. and Rosenberg, B. G. Manifest anxiety and game preference. *Child Development*, 1960, 31, 307-311.

216. Symonds, P. M. *The Ego and The Self*. New York: Appleton-Century-Crofts, 1951.

217. ____________. What education has to learn from psychology: VI. emotion and learning. *Teachers College Record*, 1958, 60, 9-22.

218. Taylor, C. and Combs, A. W. Self-acceptance and adjustment. *Journal of Consulting Psychology*, 1952, 16, 89-91.

219. Taylor, Janet A. A personality scale of manifest anxiety. *Journal of Abnormal and Social Psychology*, 1953, 48, 285-290.

220. Thom, D. A. and Newell, W. Hazards of the high I.Q. *Mental Hygiene of New York*, 1945, 29, 61-77.

221. Thompson, C. G. *Child Psychology*. Boston: Houghton-Mifflin Company, 1952.

222. Thorpe, L. P. *et al*. *California Test of Personality*. Elementary for AA, Revised. Monterey, California: California Test Bureau, 1953.

223. Torrance, E. P. *Guiding Creative Talent*. Englewood Cliffs, N.J.: Prentice-Hall, 1962.

224. Torrance, E. P. *et al*. *Assessing the Creative Abilities of Children*. Minneapolis: University of Minnesota Bureau of Educational Research, 1960.

225. Trevelyan, G. M. *English Social History*. London: Longmans, Green and Company, 1942.

226. Van Dusen, A. C. Measuring leadership ability. *Personnel Psychology*, 1948, 1, 67-79.

227. Vinacke, W. E. *The Psychology of Thinking*. New York: McGraw-Hill Book Company, 952.

228. White, R. W. Motivation reconsidered: the concept of competence. *Psychological Review*, 1959, 66, 297-333.

229. __________. *The Abnormal Personality*. New York: Ronald Press, 1956.

230. Wiggam, A. D. Do brains and character go together? *School and Society*, 1941, 54, 261-265.

231. Wood, H. B. *Behavior Preference Record*. Los Angeles: California Test Bureau, 1953.

232. Zuckerman, M. Reversed scales to control acquiescence response set in the parental attitude research instrument. *Child Development*, 1959, 30, 523-532.

APPENDIX

Schools and School Personnel Cooperating in the Investigation

The following schools and school personnel participated in one or more phases of the investigation:

ALFRED I. DUPONT SCHOOL DISTRICT

Leroy C. Olson - Acting Chief School Officer

Alfred I. Dupont Elementary School
  Dorothy Minner - Principal
    Jane Davis
    Paul Julian
    Margaret Lawrence

Forwood Elementary School
  Donald L. Farrar - Acting Principal and Director of Elementary Education
    Barbara Finnan
    Anne Herndon
    Phyllis Lafferty

NEWARK SPECIAL SCHOOL DISTRICT

Wilmer E. Shue - Superintendent

E. Frances Medill Elementary School
  Floyd Weidman, Jr. - Principal
    Margaret L. Koelig
    Emily N. McGlinchey
    Charlotte L. Wheatley

Jenney E. Smith Elementary School
  Henry M. Brader - Principal
    Glenn M. Craig
    Beatrice Derickson
    Madalynne M. Evans
    Marion L. Stevenson

West Park Place Elementary School
John X. Auletto - Principal
Charlotte S. Ludlow
Mary E. B. Melvin
John S. W. Smith

NEW CASTLE SPECIAL SCHOOL DISTRICT

Joseph E. Kleckner - Superintendent

Manor Park Elementary School
Carl E. Book - Principal
Ellen Eisenhour
Patricia Matthews
Louis Recla
Ann Taylor

Wilmington Manor Elementary School
Robert L. Davis - Principal
Blanche Champion
Harold Marshall
Doris R. Walker